Building a Well-Qualified Transitional Kindergarten Workforce in California

Needs and Opportunities

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Executive Summary

In 2021, California made major new investments to advance its commitment to early childhood education through universal preschool. One important investment was extending state funding for transitional kindergarten (TK), previously just for older 4-year-olds, to all 4-year-olds by 2025–26. To ensure the quality of new preschool investments, California must recruit and prepare a sufficient number of qualified teachers in TK and other early childhood programs—a challenge given the rapid expansion of the program. This challenge is even greater during the COVID-19 pandemic, when school districts and early childhood programs are facing significant staffing shortages.

TK Rollout Schedule

Academic Year	TK Eligibility (Must Turn 5 Between These Dates)	Maximum Number of Children Permitted Per Adult
2021–22	Sept. 2 to Dec. 2	31
2022–23	Sept. 2 to Feb. 2	12
2023–24	Sept. 2 to April 2	10
2024–25	Sept. 2 to June 2	10
2025–26	Sept. 2–Sept. 1 (All 4-year-olds)	10

Note: 10:1 ratio requirement contingent on funding availability.

Source: California Education Code § 48000 (2021).

This report provides estimates of how many TK teachers California will need through 2025–26 and discusses potential pathways to support a diverse, well-prepared workforce, both in TK and in other early childhood programs. We also offer recommendations that state policymakers could follow to stabilize, support, and expand the broader early childhood workforce and to build pathways for racially, linguistically, and culturally diverse educators.

Projecting the Need for TK Teachers: Summary of Findings

To estimate the total number of lead and assistant TK teachers that California will need through 2025–26, we use historic TK enrollment data from the California Department of Education and population projections from the California Department of Finance, among other sources. Given the uncertainty in the number of eligible children who will enroll in TK, we created three primary estimates covering a range of update assumptions, described below:

1. A lower-bound uptake of 65% in 2025–26, rising from 60% in earlier years, based on uptake in the early years of TK implementation and adjusting for potential reduced uptake due to COVID-19.
2. The observed uptake rate in 2019–20 applied through 2025–26 (about 71% statewide).
3. An upper-bound uptake of 80% in 2025–26, increasing from 75% in earlier years, based on evidence from universal preschool programs in other states.

These primary estimates assume that each class will be staffed by one lead and one assistant teacher. We further assume an initial class size of up to 24 children to meet the state's 12:1 child–adult ratio and, starting in 2023–24, a class size of up to 20 children to meet the state's proposed 10:1 ratio requirement. We assume that classes are filled at 90% capacity, on average, resulting in an average of 21.8 children per class through 2022–23 and 18.2 children per class after 2023–24. Because the state does not currently have data on the number of TK teachers employed by districts, we also estimate the number of teachers employed in our baseline year of 2019–20 based on the average class size found in an early TK implementation study and the number of children enrolled in TK that year.

The estimates build on several simple assumptions about the number of children in part-day programs and combination classes, as well as levels of teacher attrition, which we address in the sensitivity analyses in Appendix C. However, we think the estimates will provide value for policymakers, district leaders, and teacher preparation programs by shedding light on the likely magnitude of TK staffing needs between now and full implementation.

Specifically, we find that:

- **In 2025–26, over 300,000 children are likely to enroll in TK**. We estimate that between 291,000 and 358,000 children are likely to enroll in TK in 2025–26. If children enroll at pre-pandemic enrollment rates (71% statewide), TK enrollment will grow fourfold between 2019–20 and 2025–26.
- **To meet this demand, districts will need to hire between 11,900 and 15,600 additional lead teachers by 2025–26**, above and beyond the approximately 4,100 TK teachers we estimate were needed in 2019–20.
- **California will need at least 16,000 to 19,700 assistant TK teachers by 2025–26**, assuming each class will have an assistant teacher to meet child–adult ratios of 12:1 in 2022–23 and 10:1 in 2023–24.
- **Growth in TK teacher demand will not be linear over time; particularly sharp increases are projected for 2023–24 and 2025–26**. We anticipate that the largest increase in teacher demand will come in 2023–24—when child–adult ratios drop from 12:1 to 10:1—and in 2025–26, when the full cohort will become eligible for TK (adding 3 months of eligibility, compared to adding 2 months of eligibility in prior years).
- **County differences in TK uptake rates and population size translate into varying hiring expectations**. TK uptake has historically varied greatly across counties. Counties that have had low TK uptake will need relatively more teachers to meet demand at full implementation. The five largest counties alone (Los Angeles, San Diego, Orange, Riverside, and San Bernardino) account for over half of the total estimated increased demand by full implementation.

Building a Qualified, Diverse TK Workforce

These estimates show that California has a substantial, urgent need for new lead and assistant TK teachers. To meet this need, California will need to both develop new teachers and draw upon educators currently in the workforce. Yet California has different requirements for lead TK teachers and other early childhood educators, which will create challenges in moving experienced early educators into the TK workforce. Teachers working in state-funded preschools must have or be working toward a Child Development Teacher Permit, which requires 24 units of early childhood education (ECE) coursework, 16 general education units, and 175 days of experience working in an ECE program. A college degree is not required, but as will be discussed, a large share of these teachers hold a bachelor's degree. By contrast, lead TK teachers must have a Multiple Subject Teaching Credential, which requires a bachelor's degree and completion of an accredited teacher credentialing program. By August 2023, TK teachers must additionally have 24 units of early childhood coursework, a Child Development Teacher Permit, or equivalent experience. The state is also in the process of adopting a revised ECE Specialist credential specific to the needs of children in preschool through grade 3. To work as an assistant TK teacher, an individual needs to hold a high school degree and (at minimum) pass an assessment demonstrating basic skills and pedagogical knowledge. However, there are no requirements for early childhood coursework or experience for assistant TK teachers.

To build a new qualified, diverse TK and preschool workforce, California can draw on several potential pools of educators or candidates:

- **Current Multiple Subject Teaching Credential holders**, including current elementary teachers and out-of-state credential holders. These candidates can teach while earning the 24 ECE course units required to teach TK by August 2023. Local education agencies (LEAs) can organize and fund cohorts of teachers to take ECE-focused coursework at partner universities.
- **Current early childhood educators with a bachelor's degree and recent graduates of ECE bachelor's degree programs.** These educators are good candidates for fast-tracked paths into lead TK teacher positions, since they have experience working with young children, have already met several requirements needed to earn a credential, and may be attracted by the support and compensation offered for teaching TK. In addition the early educator workforce is more racially and ethnically diverse than the TK–12 workforce, with 66% of center-based teachers identifying as people of color, compared to 39% of TK–12 teachers. Possible pathways this group might take to a credential include teacher residencies, postbaccalaureate credentialing programs, and internship programs that allow candidates to work and get paid as the teacher of record while taking coursework.
- **Current early childhood educators without a bachelor's degree**. These educators have experience working with children and are good candidates for apprenticeship programs and degree pathway programs that lead efficiently to a bachelor's degree and, eventually, a teaching credential. These current early childhood educators, along with k–12 classified staff who are interested in teaching, could also potentially be employed as assistant TK teachers while working toward their degree and credential in cohorts. They

could also participate in integrated teacher education programs that allow candidates to earn a bachelor's degree and teaching credential in 4 years, with programs that build on coursework taken in community colleges.

- **New candidates** that districts might tap to fill assistant TK teacher positions and teach in other ECE programs, including recent high school graduates, parents of school-age children who are reentering the workforce, career changers, and more. Districts might additionally build dual enrollment pathways that allow students to take ECE-related coursework for college credit while in high school and support pathways to a bachelor's degree and a teaching credential. While these new candidates would not fill lead TK teacher positions in the short term, they are an important part of building a long-term ECE assistant teacher and lead teacher pipeline.

State policymakers have recently made several funding sources available to help LEAs develop teacher pathways for TK and teachers in other ECE programs. Some funding goes directly to candidates themselves, including the Golden State Teacher Grant Program, a service scholarship of up to $20,000 for teacher candidates enrolling in a teacher preparation program who commit to work in a high-need school. Most other funding goes directly to LEAs (school districts and county offices). Two grants were recently released that are specific to developing the TK and California State Preschool Program workforce: the California Prekindergarten Planning and Implementation Grant ($200 million), a formula grant available to all LEAs, and the Early Educator Teacher Development Grant ($100 million), a competitive grant for LEAs. LEAs may use these grants for supporting teacher preparation through tuition and other financial assistance to candidates. Several other recent TK–12 workforce development grants may be used by LEAs to support the TK workforce, including the Educator Effectiveness Block Grant ($1.5 billion), the Teacher Residency Grant Program ($350 million), and the Classified School Employee Teacher Credentialing Program ($125 million). TK and ECE programs may also draw on state and federal workforce development grants for apprenticeship and dual enrollment, including California's Strong Workforce Program ($248 million ongoing) and the Career Technical Education Incentive Grant program ($300 million ongoing) for career technical education, with more funding proposed in the 2022 budget.

Beyond TK: Supporting the Broader ECE Workforce

When the legislature and the governor expanded TK, they expressed intent to maintain families' access to the California State Preschool Program, Head Start, and other early learning programs. They also made several investments in ECE beyond TK, including increased funding rates for child care and state preschool. Because California collects so little data on the ECE workforce, several basic features of the workforce are poorly understood, such as the number of teachers and the extent of teacher shortages, turnover, and attrition in ECE programs. If many early educators leave ECE programs for TK, it may have significant implications for staffing and quality in the programs they leave. Policymaking to expand the TK workforce should therefore consider solutions to support and expand the entire ECE workforce, including teachers of infants, toddlers, and 3-year-olds.

Recommendations

California will need to take steps to produce an adequate supply of effective early educators in the short and long term. State policymakers can take the following six steps to stabilize, support, and expand the broader early childhood workforce and build pathways for racially, linguistically, and culturally diverse educators:

1. **Clearly map out and communicate career pathways into TK and other ECE programs**. California's state agencies should clarify both what is required to teach in ECE programs and how individuals at different stages of their careers or preparation can access scholarships and other financial supports. Each of California's counties will additionally need to coordinate and communicate their own workforce development pathways.

2. **Develop high-quality pathways into teaching TK that are tailored to the needs of experienced early educators**. Ensuring a straightforward pathway for early educators is a matter of practicality to meet the urgent need for TK teachers, but also a matter of equity, given that the center-based ECE workforce is composed primarily of women of color. The state should therefore consider ways to evaluate and give credit for knowledge and skills candidates already have as they work toward a credential. Candidates should also have access to funding and support to take additional coursework they may need for the new credential, and such coursework should be made readily available.

3. **Provide grants to institutions of higher education to develop new credentialing programs for preschool to 3rd grade educators**. To develop new credentialing programs specific to early childhood educators, institutions of higher education will need to make several up-front investments, including hiring new staff, developing curriculum and articulating coursework, and recruiting candidates. Institutions of higher education will also need to foster collaboration between teacher preparation programs and ECE-related degree programs, including at community colleges. The state could offer grants to institutions of higher education, prioritizing programs that make coursework accessible to candidates. Policymakers might prioritize grants for programs in geographic areas where relatively fewer early educators have a bachelor's degree.

4. **Set appropriate requirements for assistant TK teachers to ensure these educators are prepared to support learning and development**. Although assistant teachers in many of California's preschool programs are required to hold a Child Development Assistant or Associate Teacher Permit, assistant TK teachers are not currently required to have any early childhood knowledge, experience, or other training. Assistant teachers in TK classes might be held to the same education requirements as associate teachers in California State Preschool Program classes; that is, 12 units of ECE coursework or the equivalent. Given the implementation pressures LEAs are facing to staff classrooms, assistant teachers might be given several years to meet this requirement, with opportunities to take coursework while working.

5. **Make new investments in the broader early educator workforce, beyond TK**. As TK expands, ECE teachers may move into better compensated, better supported TK jobs. Child care and preschool programs will also need a growing supply of staff to run a high-quality program. New investments are needed to expand the workforce in the California State Preschool Program, Head Start, and other ECE programs. The legislature could reinstate funding for the $195 million Early Educator Workforce Pathways Grant that was funded in the 2020 budget but later redirected to COVID-19 relief. In addition, the legislature could fund expansion of dual enrollment of high school students in ECE coursework. New investments should be coupled with continued efforts to ensure that ECE programs have enough funding to offer competitive wages and benefits.

6. **Collect new data to monitor ECE workforce needs**. There are currently significant gaps in our knowledge about the ECE workforce, including how many teachers are currently teaching TK or what backgrounds they have. California should improve TK data collection and begin to collect workforce data from its state-subsidized early childhood programs to ensure policymakers understand and can address ECE staffing needs and gaps across the state.

Introduction

In 2021, California made historic changes to its early learning system by committing to make transitional kindergarten (TK) universal for all 4-year-olds by 2025–26. TK is defined as the first year of a 2-year kindergarten program that uses a modified kindergarten curriculum and is age and developmentally appropriate. When it was created in 2010, it was only funded for 4-year-olds who just missed the kindergarten eligibility cutoff. The state also made new investments in the California State Preschool Program (CSPP), a program for income-eligible 3- and 4-year-olds in school and community settings.

Universal preschool holds big potential benefits for California's children, as evidenced by a large body of research from high-quality programs.[1] However, these benefits are not guaranteed; preschool programs will only live up to their promise if they are well implemented and have teachers who provide high-quality learning experiences. An early evaluation of TK in California yielded promising results, showing that attending TK increased children's math and literacy scores in kindergarten, with especially strong benefits for dual language learners and children from low-income backgrounds.[2] A forthcoming study from the University of California, Berkeley, indicates that the benefits of TK for the first cohorts of students persist into 3rd and 4th grade.[3]

If California is to reap enduring benefits from universal preschool, it will need developmentally appropriate programs led by a high-quality teaching workforce. Preschool expansion presents an opportunity to make significant improvements to preparation, professional development, compensation, and working conditions for educators working with 3- and 4-year-olds, who, like other early educators, have historically had uneven access to quality preparation and professional learning and have worked for very low pay.[4] It also presents an opportunity to diversify the TK workforce by bringing in current early educators, who are much more linguistically, racially, and ethnically diverse than their TK–12 counterparts.[5]

Yet preschool expansion will also present significant challenges for public schools, early childhood programs, and the state. Public schools will need to create and staff new TK programs in short order. Early childhood programs will likely see declines in their 4-year-old enrollment and may need to replace staff who move into TK positions. The state will need to find a way to support current early educators to meet TK qualifications and add many new teachers with early childhood education (ECE) knowledge and expertise to the broader early childhood workforce. These changes come at a time when school districts face unprecedented teacher shortages in all grades, with far too few new candidates graduating from teacher preparation programs to meet demand.[6] Shortages are even more concerning in early childhood programs, with staff leaving the field at record rates as the pandemic puts new stressors on an already poorly supported and poorly compensated field.[7]

This report provides estimates for how many TK teachers California will need through 2025–26 and discusses ways to support a diverse, well-prepared workforce, both in TK and in other early childhood programs. We start with background on California's preschool programs and the plan for TK expansion, as well as requirements and current preparation routes for preschool teachers. We then estimate the number of new TK teachers, lead and assistant, that will be needed in California. Next, we identify potential pools of existing and incoming teachers and pathways they might take into the profession. We discuss the potential implications of TK expansion on the rest of the ECE workforce and conclude with recommendations for state policy.

California's Early Learning Landscape

California has several publicly funded early learning programs for preschoolers, including the TK, California State Preschool Program (CSPP), Head Start, early childhood special education, and child care vouchers for working families with low incomes. Each program has its own eligibility criteria, quality standards, and teacher requirements.[8]

In 2021, California's legislature and governor decided to make one of these programs, TK, universal for 4-year-olds by 2025–26. When TK was created by the legislature in 2010, it was defined as the first year of a 2-year kindergarten program, intended for children who just missed the kindergarten eligibility cutoff.[9] Like kindergarten, TK is provided exclusively in school districts and charter schools and has no income-eligibility requirements. Currently, to be eligible for TK, a child must turn 5 between September 2 and December 2. In 2019–20, nearly 89,000 children enrolled in TK, approximately 71% of those who were eligible.[10]

Under the new law, TK eligibility is slated to expand to all 4-year-olds over the course of 5 years by extending the age of eligibility by 2 to 3 additional months each year until 2025–26. (See Table 1.) It also adds new child–adult ratio requirements, allowing classes to have no more than 12 children per adult starting in 2022–23. (An adult might be a lead teacher, assistant teacher, or classroom aide.) Ratios will be further reduced to no more than 10 children per adult by 2023–24, contingent on available funding. These changes will bring TK into alignment with professional standards and align more closely with CSPP, which allows no more than eight children per adult.[11]

Table 1
TK Rollout Schedule

Academic Year	TK Eligibility (Must Turn 5 Between These Dates)	Maximum Number of Children Permitted Per Adult
2021–22	Sept. 2 to Dec. 2	31
2022–23	Sept. 2 to Feb. 2	12
2023–24	Sept. 2 to April 2	10
2024–25	Sept. 2 to June 2	10
2025–26	Sept. 2–Sept. 1 (All 4-year-olds)	10

Note: 10:1 ratio requirement contingent on funding availability.

Source: California Education Code § 48000 (2021).

Lead TK teachers, like kindergarten teachers, must have a Multiple Subject Teaching Credential, which requires a bachelor's degree, a full year of ECE coursework, 600 hours of clinical teaching experience, and a passing score on a teacher performance assessment, among other requirements.[12] Districts receiving state funding for TK also must ensure lead TK teachers fulfill one of the following requirements by 2023:

- complete 24 college units in ECE;
- hold a Child Development Teacher Permit, issued by the California Commission on Teacher Credentialing (CTC); or
- have equivalent experience, as determined by the employer.[13]

The state does not specify education requirements for assistant TK teachers or teacher aides. However, the federal Every Student Succeeds Act requires that all adults supporting instruction in Title I schools be paraprofessionals, meaning that they must have at least a high school degree and pass a local assessment of knowledge and skill in assisting in instruction.[14] As of yet, no early childhood knowledge or expertise is required, although national standards suggest that assistant teachers should hold at least a CDA credential.[15] According to an initial TK evaluation, in school years 2013–14 and 2014–15 only about half of districts had instructional aides in TK classrooms at some point in the day, and little is known about the qualifications these aides held.[16]

As TK eligibility expands, 4-year-olds will continue to maintain eligibility for the other state early learning programs, including CSPP, Head Start, and child care subsidies, meaning that families who meet those programs' eligibility requirements may be able to choose among publicly funded preschool options. (See Table 2.) The legislature also recently authorized CSPP contractors to offer wraparound care for TK and kindergarten students who meet CSPP eligibility requirements.[17] For example, CSPP contractors could provide before- and after-school care for TK and kindergarten students or provide programming during the summer.

CSPP is the largest program serving 4-year-olds other than TK, enrolling 81,000 4-year-olds in 2019–20. CSPP contractors include school districts and community-based organizations.[18] To participate in CSPP, a child must have a family income that does not exceed 85% of the state median income or meet other eligibility criteria, such as experiencing homelessness.

CSPP, unlike TK, does not require teachers to hold a college degree. Assistant teachers in CSPP must have at least a Child Development Assistant Teacher Permit, which requires 6 units of ECE, or an Associate Teacher Permit, which requires at least 12 units of ECE and 50 days of experience working in an ECE program.[19] (The Associate Teacher Permit is valid for 5 years and may only be renewed once, encouraging the holder to earn a higher-level permit.) Lead teachers must hold or be working toward a Teacher Permit, which requires at least 24 units of ECE coursework, 16 units of general education coursework, and 175 days of teaching experience. Although it is not required, most lead teachers in CSPP hold a college degree: About 60% hold a bachelor's degree and 26% hold an associate degree.[20]

Table 2
Preschool Landscape for 4-Year-Olds in California in 2019–20

	Transitional Kindergarten	California State Preschool	Head Start	Subsidized Child Care [b]
Number of 4-Year-Olds Served, 2019–20	89,000	81,000	41,000	17,000
Income Eligibility Threshold	None	85% state median income	130% federal poverty level	85% state median income
Minimum Teacher Qualifications	Multiple Subject Teaching Credential + 24 units of ECE coursework, a Child Development Teacher Permit, or equivalent experience [a]	Child Development Teacher Permit	A.A. in ECE	Varies
Teacher Preparatory Institutions	Postbaccalaureate teacher preparation programs	Community colleges and 4-year colleges	Community colleges and 4-year colleges	Community colleges and 4-year colleges

[a] Requirements to be met by 2023. An ECE Specialist credential may also soon authorize the holder to teach TK.

[b] "Subsidized child care" includes children enrolled in child care funded by CalWORKs or the Alternative Payment Program.

Note: Some children may have enrolled in more than one program and thus may be counted twice in program enrollment counts.

Sources: California Department of Education. (2022). *Transitional kindergarten data*. https://www.cde.ca.gov/ds/ad/filestkdata.asp; California Department of Education. *Two-month average data reports: Average number and percent of children by contract type and age group, October 2019/April 2020*. https://www.cde.ca.gov/sp/cd/re/ccannualreports.asp; Office of Head Start. (2022). *Program information report (PIR) enrollment statistics report: 2019—State Level: CA*. https://eclkc.ohs.acf.hhs.gov/data-ongoing-monitoring/article/program-information-report-pir; Melnick, H., Ali, T. T., Gardner, M., Maier, A., & Wechsler, M. (2017). *Understanding California's early care and education system*. Learning Policy Institute.

Children from families with incomes below the federal poverty line are also eligible to attend Head Start. In 2019–20 just under 41,000 4-year-olds attended Head Start in California.[21] Head Start requires teachers to have at least an associate degree and specialization in ECE, and half of all Head Start teachers nationally must have a bachelor's degree.[22] About 54% of Head Start lead teachers in California hold a bachelor's degree.[23]

An additional 17,000 4-year-olds participated in other state-funded programs in 2019–20, primarily voucher-based child care funded through CalWORKs and the Alternative Payment Program.[24] Teachers in privately operated licensed centers accepting child care vouchers must hold at least a Child Development Associate Teacher Permit, which requires 12 units of ECE and 50 days of experience working in an ECE program. About 54% of lead teachers in center-based programs that do not receive Head Start or CSPP funding have a bachelor's degree—about the same proportion of teachers with a bachelor's in Head Start.[25]

Demographics of the ECE and TK–12 Workforce in California

In 2020, an estimated 66% of the state's center-based early educators were people of color. ECE teachers are more diverse than the TK–12 workforce, 39% of whom are people of color, although California's TK–12 workforce is more diverse than that of most other states. Latino/a teachers, in particular, are more represented in the ECE workforce. More specifically, an estimated 39% of center-based early educators in California identify as Latino/a, 34% white, 10% Asian, 8% multiethnic, 5% Black, and 3% other. By comparison, 61% of the TK–12 workforce identifies as white, 21% Latino/a, 6% Asian, 4% Black, 1% multiethnic (not Hispanic), and 8% other or no response. An estimated 46% of center-based early educators identify as multilingual. Data on the diversity of the workforce in TK, specifically, are not currently available.

Note: Race/ethnicity categories are defined in *Demographics of the California ECE Workforce*, cited below. We use these groups as the reference for TK–12 educators as well; hence, "other" includes American Indian/Alaskan Native (1% of TK–12 educators), Pacific Islander (<1%), and Filipino (2%). The TK–12 data use the classification "African-American" instead of Black and "two or more races" instead of "multiethnic."

Sources: Powell, A., Kim, Y., & Montoya, E. (2021). *Demographics of the California ECE workforce*. Center for the Study of Child Care Employment, University of California, Berkeley. https://cscce.berkeley.edu/publications/data-snapshot/demographics-of-the-california-ece-workforce/; California Department of Education. (2020). *Fingertip facts on education in California*. https://www.cde.ca.gov/ds/ad/ceffingertipfacts.asp

The Landscape of Higher Education Preparation for Early Educators

Because there is no single permit or credential required to work in ECE programs broadly, there are multiple pathways to become an ECE teacher. These pathways are offered through community college, 4-year undergraduate, and postbaccalaureate teacher preparation programs.

Community colleges: California's community colleges are an important resource for many early educators earning Child Development permits because they are available across the state, have low tuition relative to other institutions of higher education, and offer ECE coursework required to earn a permit. Many early educators return to school at community colleges while they are working, to gain knowledge and advance their careers. A 2015 study from the Center for the Study of Child Care Employment found that 103 of California's 116 community colleges offer coursework in ECE.[26] Most of these colleges offer a core set of eight classes that are part of the Curriculum Alignment Project, an initiative of California community college and state university faculty that identified common ECE coursework to be taught across California.[27] In 2020–21, nearly 6,000 associate degrees in ECE were conferred in California, a 12% increase from the prior year. More than half of the degrees issued were degrees for transfer, meaning that graduates can enroll in the California State University system with junior standing.[28]

Four-year colleges: Several colleges and universities throughout the state, including 42 California State University and private programs, offer bachelor's degrees and master's degrees in ECE, child development, and related fields. These programs are intended to prepare candidates for many professions in early childhood, not only teaching (for example, social work, psychiatry, and advocacy), and less than one third of these programs have student teaching requirements.[29] Some of these programs are located in schools of education that offer a teacher credential, but many are housed in a separate department. In 2019–20, institutions of higher education in California conferred nearly 5,000 bachelor's and master's degrees related to ECE and child development, a 5% increase compared to the previous year.[30]

Postbaccalaureate teacher preparation programs: Teacher preparation for TK and other elementary grades currently happens primarily at postbaccalaureate teacher preparation programs offering Multiple Subject credentials. Most candidates in teacher preparation programs study full time for 12 months after completing a bachelor's degree, with coursework that is accredited by the CTC. These programs typically include little ECE coursework, so TK teachers and teacher candidates often take the 24 units of ECE coursework required for TK at community colleges, separate from their teacher preparation coursework. There are 95 teacher preparation programs that offer a Multiple Subject Teaching Credential in California, including 23 California State University campuses, 49 private colleges, 9 University of California campuses, and 23 local education agencies (LEAs).[31] In 2019–20, the CTC issued 7,773 new Multiple Subject Teaching Credentials. Of these, about 4 in 5 were issued by institutions of higher education: 4,781 (62%) through traditional teacher preparation programs and 1,460 (18%) through an internship pathway. The remaining credentials were issued through a district or county internship program (2%) and to teachers who were prepared outside of California (18%).[32]

Teachers working in early childhood special education must have an Education Specialist Instruction Credential with specialization in Early Childhood Special Education, which typically takes longer to obtain than a Multiple Subject credential. There are 17 approved institutions throughout the state that offer this credential.[33]

Projecting the Need for TK Teachers

Expanding TK eligibility to all 4-year-olds by 2025–26 will necessitate adding a substantial number of teachers to the early educator workforce. In this section, we address how many lead and assistant teachers will be needed, with implications for district hiring. We provide our projections for lead and assistant TK teacher demand from 2022–23 through 2025–26. We offer a range of estimates that account for the uncertainty of how many families will opt to send their children to TK and how districts will implement TK programs. We conclude with a discussion of factors that could affect our estimates.

Data, Assumptions, and Methods

Our approach to projecting the need for lead and assistant TK teachers relies on the following four basic steps. First, we project the number of children expected to enroll in TK each year by multiplying the number of children we expect to be eligible by an estimated uptake rate, or portion of eligible children we expect to enroll in TK. Second, we compute the number of TK classes needed each school year by dividing the number of children we expect to enroll by an estimated class size. Third, we multiply the expected number of classes by the number of teachers we expect to staff that class. Finally, to identify how many additional teachers will be needed above and beyond those already employed, we subtract the number of teachers we expect are currently in the workforce from the total projected need. We conduct the analyses at the county level and obtain California's estimates as the sum of the counties. These methods are explained in more detail in Appendix A: Methodology. Our analysis relies on the data sources and assumptions described below.

Eligible population: To estimate the number of children eligible for TK, we use population projections from the Department of Finance. These projections anticipate a 10.8% decrease in California's 4- and 5-year-old population between 2019 and 2025.[34]

Uptake: We define uptake as the number of children enrolled in TK as a portion of the number of children eligible for the program. We consider three possible scenarios for TK uptake, which we use to project the number of children who enroll in TK each year. (See Table 3.) These options reflect the uncertainty in how quickly TK programs will be ramped up and how many eligible families will enroll their children in TK (versus enrolling in another preschool program or not enrolling in preschool at all).[35] They include the uptake rates described below.

1. Uptake observed in 2019–20: The first scenario assumes that counties' uptake rates remain the same as rates observed in 2019–20, the last observation prior to the COVID-19 pandemic, and that they remain constant from 2021–22 onward. For California, just under 71% of eligible children were enrolled in 2019–20 on Census Day.[36] This scenario is similar to TK uptake assumptions used in TK enrollment estimates from other organizations.[37]

2. Lower bound: The second scenario is a lower-bound estimate in which the uptake rate is 60% for the period 2021–22 through 2024–25 and 65% for 2025–26. We chose a lower bound of 65% in 2025–26 because it approximates the average uptake in the early years of TK implementation (64.4% in 2015–16). We chose 60% through 2024–25 because TK enrollment declined significantly during the first year of the pandemic, when most

schools were operating remotely (55.5% of the eligible population enrolled in 2020–21, the most recent year for which data are available). This scenario models a situation in which enrollment does not quickly rebound to pre-pandemic levels.[38]

3. Upper bound: The third scenario is an upper-bound estimate that uses a rate of 75% through 2024–25 and 80% in 2025–26—values that are based on evidence from universal preschool in other states. Uptake rates in most states offering universal preschool are between 68% and 84%. For example, uptake rates in 2019–20 reached 84% in Washington, DC; 76% in Vermont; 70% in Oklahoma; and 68% in West Virginia.[39] While we consider it unlikely that this upper bound will be achieved statewide by 2025–26, more than a quarter of all counties had uptake at or above 80% in 2019–20; thus, 80% could be seen as an achievable long-term goal for which the state should be prepared.[40]

Table 3
TK Uptake Parameters Used in the Model

	Uptake Rate Observed in 2019–20	Lower Bound	Upper Bound
Uptake	Observed county-level uptake rate in 2019–20 applied through 2025–26 (71% statewide)	60% through 2024–25, 65% in 2025–26	75% through 2024–25, 80% in 2025–26
Rationale	Based on pre-pandemic TK data and accounts for significant regional variation in TK uptake	Lower bound, based on the average uptake in the early years of TK implementation with adjustments for COVID-19	Upper bound, based on evidence from universal preschool programs in other states

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Class size, child–adult ratios, and staffing configuration: We assume that each class will be staffed by one lead and one assistant teacher. Following required child–adult ratios of 12:1 in 2022–23 and 10:1 starting in 2023–24, we expect that LEAs will aim for a class size of 24 in 2022–23 and 20 starting in 2023–24.[41] We expect that schools will not always be able to fill their TK classrooms with the maximum allowable number of children, so we further assume that enrollment efficiency (the ratio of children enrolled in a class compared to the desired class size) will be around 90% on average in California. As a result, we assume that average class size through 2022–23 will be just under 22 children per class (21.8), and that starting in 2023–24, class size will be just over 18 children per class (18.2). The average class size observed in a 2013–14 TK implementation study was 21.8, and it was also the average class size in TK and kindergarten in 2017–18.[42]

Our estimates also assume that each TK teacher teaches only one class, even if that class is part-day, since we do not have data on the number of part-day TK classes or how many teachers teach two part-day classes. We further assume that all classes are TK only (versus a TK–K combination class), again due to lack of data on the number of combination classes currently offered in the state.[43] Given the importance of these assumptions both for the projections and for implementation, we include them in our sensitivity analyses. (See Appendix C.) We also model other class sizes and staffing configurations, such as a class size of 24 with one lead and two assistant teachers.

Current TK workforce: We estimate that there were 4,100 lead teachers employed to teach TK at baseline (2019–20). We estimate the number of lead teachers currently teaching TK using the parameters just described: We divide the number of children enrolled in 2019–20 (the last year of enrollment prior to the pandemic) by an estimated class size (21.8). We use this estimate to calculate the number of additional TK teachers that need to be hired through 2025–26, above and beyond those already in the workforce. We use an estimate, rather than a count of TK teachers, because administrative data are not currently available on the number of teachers currently teaching TK.[44] We similarly do not know the demographics of the TK workforce or what ECE experience they hold.

For assistant teachers in TK, no recent data have been collected—the only data of which we are aware are from an initial TK evaluation conducted from 2013 through 2015. Since assistant teachers have not been required in TK classes, we do not have a way to estimate the number in the workforce. We thus project the total need for assistant teachers but do not project the additional need above and beyond current staffing levels.

Teacher attrition: We do not account for teacher attrition; that is, teachers leaving the workforce in any given year. While we know that before the pandemic roughly 8.5% of California k–12 teachers left the profession or state annually,[45] we do not have an estimate of attrition specific to TK or other elementary grades, nor do we have baseline data on the TK teacher supply to which we would apply that rate, as explained. However, in the sensitivity analyses in Appendix C, we explore how sensitive our projections are to this assumption.

Our estimates are based on analyses that are intentionally simple. However, we think they will provide value for policymakers, district leaders, and teacher preparation programs by shedding light on the likely magnitude of TK staffing needs between now and full implementation. Given that these are estimates, we report projections rounded to the nearest hundred. We offer a discussion and additional estimates in our sensitivity analyses.

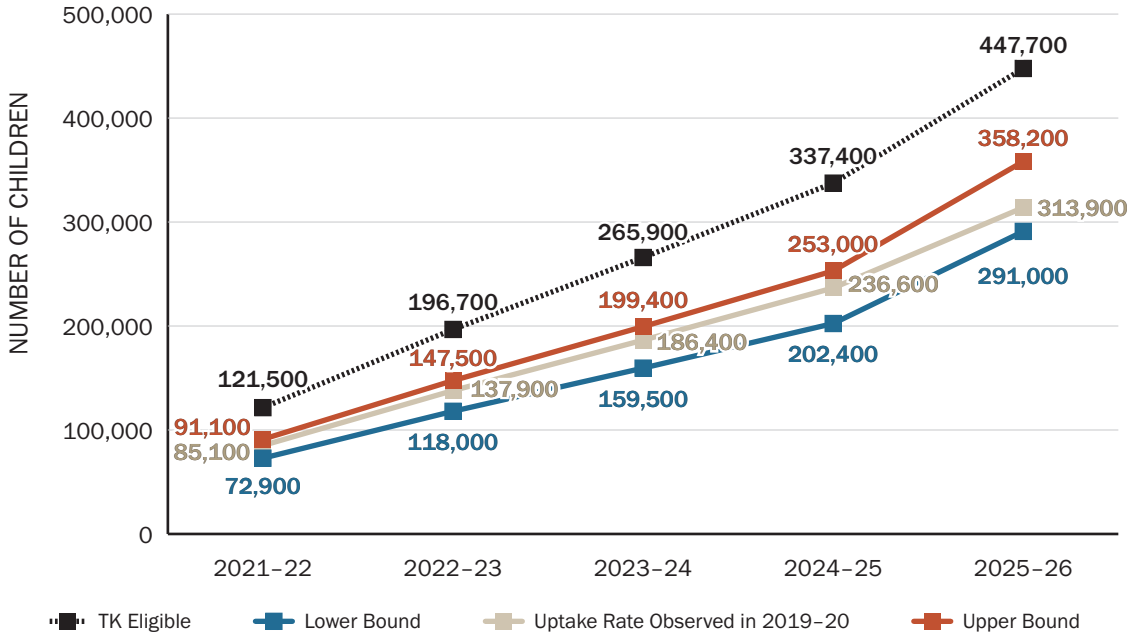
Findings

We next share our projections for aggregate statewide TK enrollment and demand for lead and assistant TK teachers. We discuss how demand will vary over time and across counties. We offer estimated TK enrollment and teacher demand for individual counties in Appendix B.

In 2025–26, more than 300,000 children are likely to enroll in TK.

The expansion of TK to all 4-year-olds over the course of 5 years will gradually increase the number of eligible and enrolled TK students. In 2025–26, more than 447,700 children will be eligible for TK (see Figure 1). Based on the uptake assumptions described in Table 3, this would mean that TK enrollment could be between 291,000 and 358,000 children by 2025–26. By comparison, 89,000 children enrolled in 2019–20, and about 69,000 enrolled in 2020–21, the first year of the COVID-19 pandemic, when many classes were online. If 2019–20 enrollment rates were to hold steady in 2025–26, TK enrollment would grow fourfold, to 313,900.

Figure 1
Eligible TK Population and Projected TK Enrollment Under Three Modeled Uptake Scenarios



Notes: Numbers rounded to the nearest hundred. "Lower Bound" assumes uptake will be equal to 60% through 2024–25 and 65% in 2025–26; "Uptake Rate Observed in 2019–20" assumes county-level uptake rates will be equal to uptake rates in 2019–20 for all years through 2025–26 (71% statewide); and "Upper Bound" assumes uptake will be equal to 75% through 2024–25 and 80% in 2025–26.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

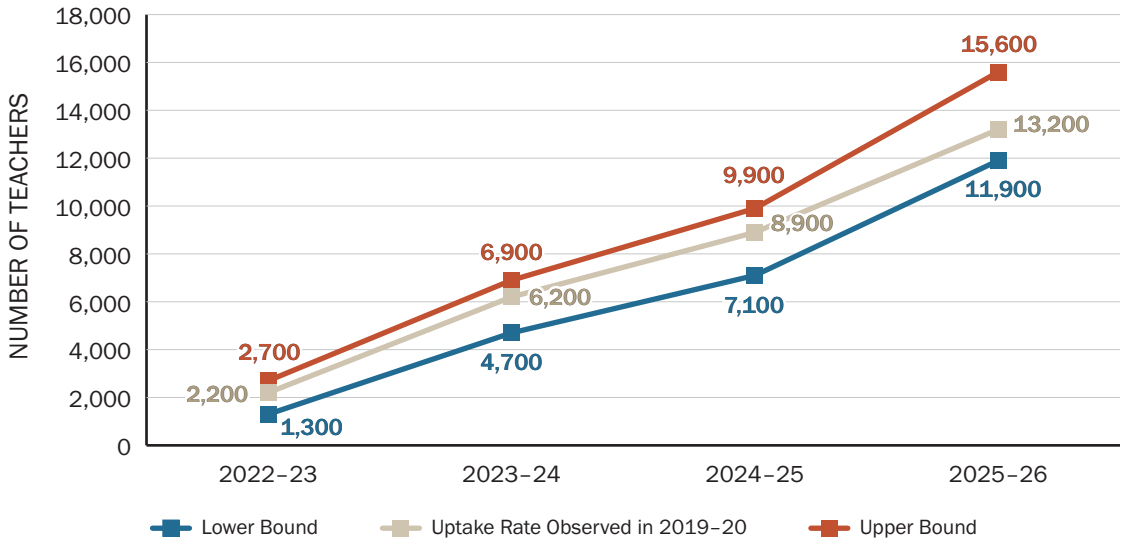
California will need a total of 16,000 to 19,700 lead TK teachers in 2025–26.

We estimate that California will need between 16,000 and 19,700 lead teachers by full implementation in 2025–26 to serve projected TK enrollment, including the estimated 4,100 TK teachers already in the workforce. These estimates are based on a lower-bound uptake of 65% and an upper-bound uptake of 80%. If uptake in each county returns to the rate seen in 2019–20 prior to the pandemic (71% statewide), California will need a total of about 17,300 lead teachers in 2025–26.

To meet this demand, districts will need to hire between 11,900 and 15,600 additional lead teachers.

We project that the number of lead TK teachers will need to increase by between 11,900 and 15,600 by 2025–26, above and beyond the estimated 4,100 TK teachers employed in 2019–20. (See Figure 2.) Our lower-bound estimate (11,900) is based on an uptake of 65%. Our upper-bound estimate (15,650) is based on an uptake of 80%. If uptake returns to the rates seen in 2019–20 prior to the pandemic (71% of eligible children enrolled in California as a whole), California will need an additional 13,200 lead teachers. Based on this estimate, California would need to quadruple the number of TK teachers between 2019–20 and 2025–26.

Figure 2
Cumulative Number of Additional Lead TK Teachers Needed Through 2025–26



Notes: Numbers rounded to the nearest hundred. Cumulative additional demand is the total demand each year net of the 4,100 teachers we estimate were needed in 2019–20. Total demand estimates for the period 2019–20 through 2025–26 are shown in Appendix D. "Lower Bound" assumes uptake will be equal to 60% through 2024–25 and 65% in 2025–26; "Uptake Observed in 2019–20" assumes county-level uptake rates will be equal to county-level uptake rates in 2019–20 for all years through 2025–26 (71% statewide); and "Upper Bound" assumes uptake will be equal to 75% through 2024–25 and 80% in 2025–26. Class size is equal to 21.8 in the baseline year until 2022–23 and 18.2 in 2023–24 through 2025–26. Total for California equals the sum of the counties.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

California will need between 16,000 and 19,700 assistant TK teachers in 2025–26.

Most classes will be required to have an assistant teacher to meet child–adult ratios of 12:1 in 2022–23 and 10:1 in 2023–24. We expect the total demand for assistant TK teachers to be about equal to the total demand for lead TK teachers, with one lead teacher and one assistant teacher staffing each class. We only calculate the total number of assistant teachers needed, rather than the additional number needed, because no data are available on the number of assistant teachers currently employed.

Growth in TK teacher demand will not be linear over time, with particularly sharp increases projected for 2023–24 and 2025–26.

Due to the rollout specified in the 2021 state budget, including the specifications for eligibility and child–adult ratios (see Table 1), the estimated increases in the number of additional teachers needed each year relative to the previous year are not linear.

The largest increase in teacher demand will likely occur in 2023–24—when child–adult ratios drop from 12:1 to 10:1—and in 2025–26, when the full cohort will become eligible for TK (adding 3 months of eligibility compared to adding 2 months of eligibility in prior years). (See Figure 2.)

County differences in TK uptake rates and population size translate into varying hiring expectations.

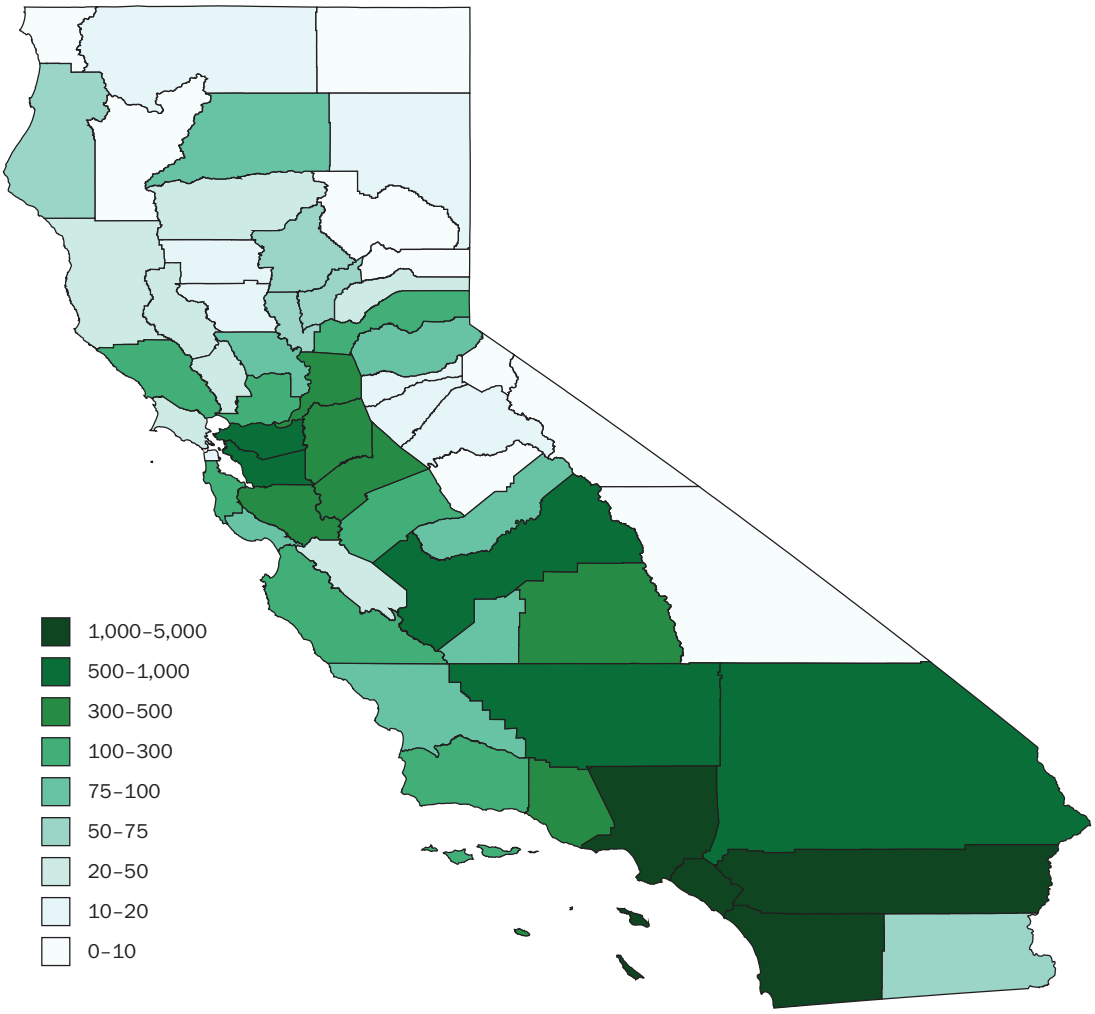
Local differences in observed TK uptake, as well as the size of the TK-eligible population, lead to significant variation in the estimated demand for new teachers by county. (See Figures 3 and 4.) As expected, the largest counties are responsible for the largest estimated demand for additional TK teachers. The five largest counties alone (Los Angeles, San Diego, Orange, Riverside, and San Bernardino) account for over half of the total estimated increased demand by full implementation.

Our analyses show significant variation in TK uptake across counties. (See Figure 4.). Counties with the highest uptake rates in 2019–20 were El Dorado, Kern, Placer, Plumas, San Benito, Colusa, and Amador (all over 93.5%), whereas Alpine and Sierra exhibited the lowest uptake rates among all counties.[46] Counties that have historically had low TK uptake will need relatively more teachers to reach demand at full implementation.[47]

There are several factors that could be driving variation in uptake across counties. One factor that may have led to apparently higher uptake rates may be that some children who enrolled in TK were not actually age-eligible. This may have been the case because some districts have what is called expanded TK, in which districts use local funds to enroll younger children who are not yet eligible for state funding. Younger 4-year-olds enrolled in expanded TK are not differentiated in publicly available data from children enrolled in TK and may thus inflate uptake rates. Los Angeles Unified School District is one example of a district that has enrolled children in expanded TK at scale.[48] Variation in uptake could also be due to families' preference for TK relative to other available early learning programs in the region. One indication of the latter is that across counties, TK enrollment was negatively correlated with the share of 4-year-old children enrolled in CSPP or in publicly funded child care (-0.24 in both cases).[49] In other words, the larger the share of children participating in CSPP, the smaller the share of children participating in TK, on average.

Finally, TK uptake may be related to whether LEAs offered a TK program at all, or whether they relied on TK–K combination classes. Recent analysis of district-level TK enrollment showed that small districts, compared to medium and large districts, enroll much lower percentages of TK students relative to kindergarten students.[50] Small districts may not offer TK at all, or they may not have enough TK students to fill a full class, requiring them to use TK–K combination classes, which are less attractive to parents. Our exploration of whether the variation in uptake could depend on county size, however, did not suggest any significant correlation between uptake and county population (0.07). Research additionally shows that basic aid districts (districts that rely upon local property taxes and do not receive state funding for TK) also enroll TK students at lower rates.

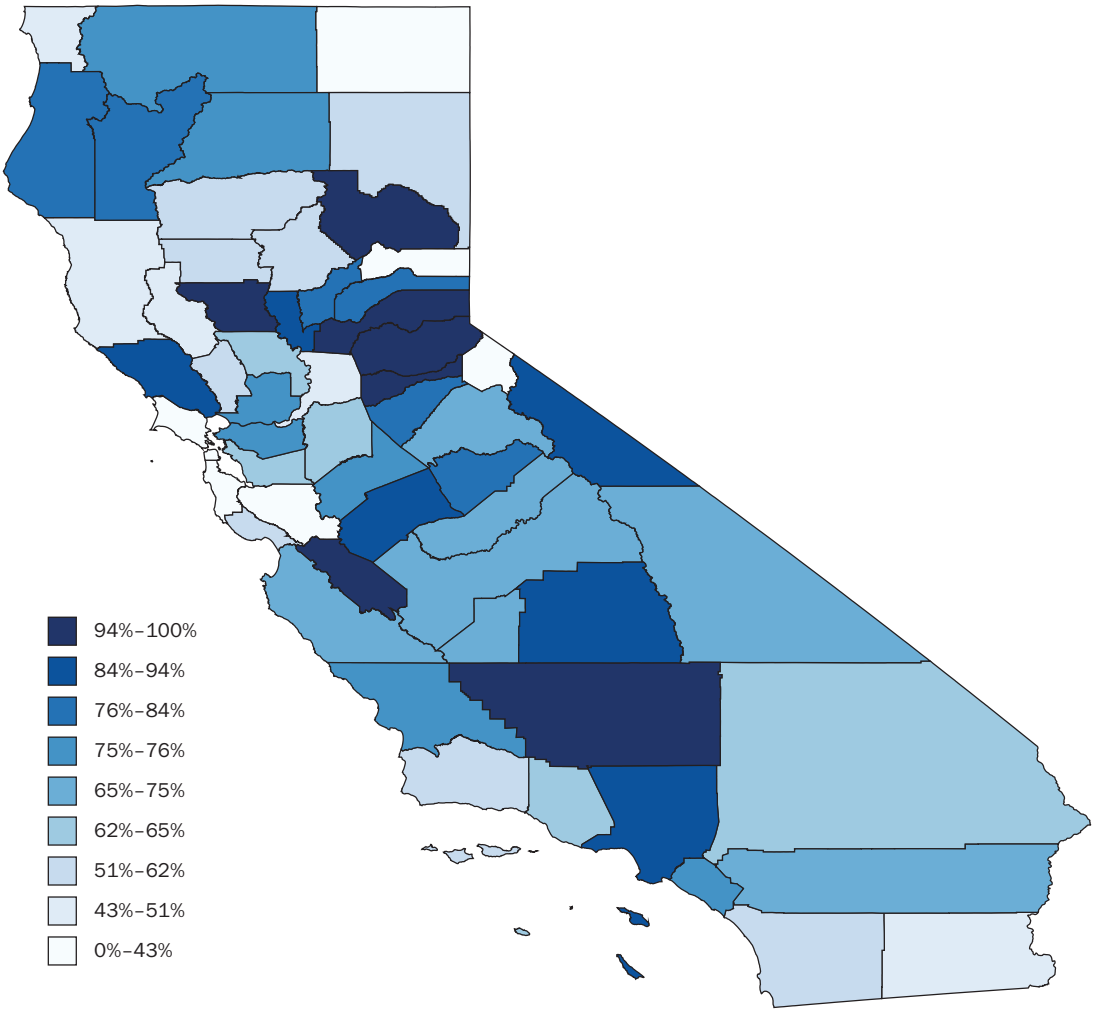
Figure 3
Total Demand for TK Teachers in 2025–26, by County



Notes: Estimates for the total demand for TK teachers in 2025–26 are obtained by applying the observed county-level uptake rates in 2019–20 to the eligible population in each county in 2025–26, with class size equal to 18.2. San Francisco's low uptake rate is a reporting error, but the corrected value is not available at the time of writing.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age.* https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Figure 4
TK Uptake Rates in 2019–20, by County



Notes: Estimates for the total demand for TK teachers in 2025–26 are obtained by applying the observed county-level uptake rates in 2019–20 to the eligible population in each county in 2025–26, with class size equal to 18.2. San Francisco's low uptake rate is a reporting error, but the corrected value is not available at the time of writing.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Sensitivity of Findings

In the analyses above, we provide three uptake scenarios to capture potential variation in TK enrollment and staffing as the program advances to full implementation. However, certain circumstances could lead to demand that is higher or lower than our estimates. We next offer a discussion of those situations, and in Appendix C we provide estimates of how sensitive our TK teacher projections would be to adjustments in some of our assumptions. We discuss each of the possibilities independently; that is, assuming each assumption would be changed without affecting any other parameters.

Why California could need more lead TK and assistant teachers than projected

The following scenarios would lead to higher demand for TK teachers than we projected:

- **Higher enrollment:** TK enrollment will be higher than expected if families enroll their children in TK at higher rates than we assume. As TK becomes universal, awareness of the program might grow relative to earlier years, when it was just for some 4-year-olds. Lower child–adult ratios may also make TK more attractive to parents. Also, if districts expand the number of TK classrooms operating as full-day programs—for example, through the Expanded Learning Opportunities Program—or reduce the number of combined TK–K classrooms, TK could be more appealing to parents than in prior years.[51]
- **Smaller class size or alternative classroom configurations using more adults per child:** California would also need more TK teachers if the average class size is lower than we anticipate. This could be the case if districts opt for small classes or opt for classroom configurations that require more teachers, such as more assistant teachers per class, to improve quality. Classes might also be smaller than anticipated if districts are not able to fill classes as efficiently as expected due to enrollment uncertainty or patterns of attendance, particularly in rural and in small districts.
- **Overestimated size of the current workforce:** The number of additional TK teachers needed could also be higher than we project if we overestimated the number of TK teachers currently in the workforce. Because data are not available on the number of TK teachers currently in the workforce, we relied upon an estimated number of TK teachers needed to meet demand in 2019–20, prior to the pandemic, which we infer from the number of children enrolled that year. Additionally, we do not account for attrition. Attrition was around 8.5% for TK–12 educators in California in 2015–16 (the last year for which we had data)[52] and may have been higher during pandemic years. If the size of the TK workforce decreased during the pandemic years, we would have overestimated the size of the current TK workforce.
- **Expanded TK:** Districts will have higher enrollment than expected in the early years of implementation if they voluntarily enroll younger 4-year-olds through expanded TK before they are eligible for state funding, as Los Angeles Unified School District has done.[53]

Why California could need fewer lead TK and assistant teachers than projected

The following factors would lead to lower demand for TK teachers than we projected:

- **Lower enrollment:** Families' concerns about COVID-19 could cause them to keep their children out of school in TK, which is not mandatory, and depress the need for teachers. Families might also choose other state-funded or private preschool options over TK at higher rates than in past years. Parents might choose non-TK programs due to concerns about quality, or the cultural and linguistic match of TK programs, which can be an important factor for families choosing ECE, particularly for immigrant families.[54]
- **Larger class size or alternative classroom configurations using fewer adults per child:** Demand for teachers might be lower than projected if class sizes are larger than we expect. The total number of teachers hired might be lower than expected due to

teacher shortages or facility constraints. Districts might also choose to have larger classes with two assistant teachers (e.g., a class of 24 with one lead and two assistants) to meet the 10:1 child–adult ratio, instead of a class of 20 with one lead and one assistant teacher. This scenario would lead to lower demand for lead teachers than we project—but higher demand for assistant teachers. Child–adult ratios and class sizes will also be higher than we project if the legislature does not appropriate funding to reduce child–adult ratios to 10:1, as planned.

- **Alternative staffing configurations associated with part-day sessions or combo classes:** We may also have overestimated the number of teachers needed if districts have one lead teacher run two part-day TK sessions. We currently lack data to know how common this staffing model is, and double sessions could become more common as districts deal with staffing shortages.[55] Districts could additionally increase the number of TK–K combination classes, especially if doing so allows them to fill classes more efficiently. Part-day sessions and combination classes may be more common in rural and small districts, which represent a small proportion of the total eligible population, but they would reduce the number of new TK teachers needed, assuming existing kindergarten classes have the capacity to absorb new TK students.

- **Underestimated size of the current workforce:** The number of additional TK teachers needed could also be lower than we project if we underestimated the number of TK teachers currently in the workforce.

- **District failure to offer TK to all eligible children:** If districts do not offer TK to all 4-year-olds as required, it will lead to fewer teachers being hired (although it would not technically affect demand). Districts might be slow to ramp up TK according to state requirements due to shortages of teachers, facilities, or funding. A study of TK from the Public Policy Institute of California shows that some districts with elementary schools had no TK enrollment at all in 2019–20, despite TK being required for older 4-year-olds. Others offered TK only at some schools, which appeared to depress TK enrollment.[56]

This discussion illustrates likely events that could affect our estimates. Although they are discussed independently, models that build on slightly different assumptions could lead to projections that are substantially different from ours. For example, the Center for the Study of Child Care Employment (CSCCE) estimated in August 2021 that California will need 8,000 to 11,000 additional TK teachers by full implementation. These projections are lower than ours due to differing assumptions about uptake, average class size, classroom configurations, and the size of the current TK workforce. Specifically, CSCCE's analysis assumes that uptake will be roughly the same as observed in 2019–20, with a lower-bound class size equal to 20 children with one lead and one assistant teacher and an upper-bound class size equal to 24, staffed by one lead and two assistant teachers. By contrast, we estimate a range of uptake rates but a lower average class size at full implementation, since we assume a different classroom configuration with classes staffed by one lead and one assistant teacher and not all classes being filled to maximum capacity. We also rely on different estimates of the current workforce: CSCCE assumes that there are currently 5,300 TK teachers in the workforce, whereas we estimate there are 4,100. CSCCE's assumptions lead to a lower projected demand for lead teachers but a higher projected demand for assistant TK teachers.[57]

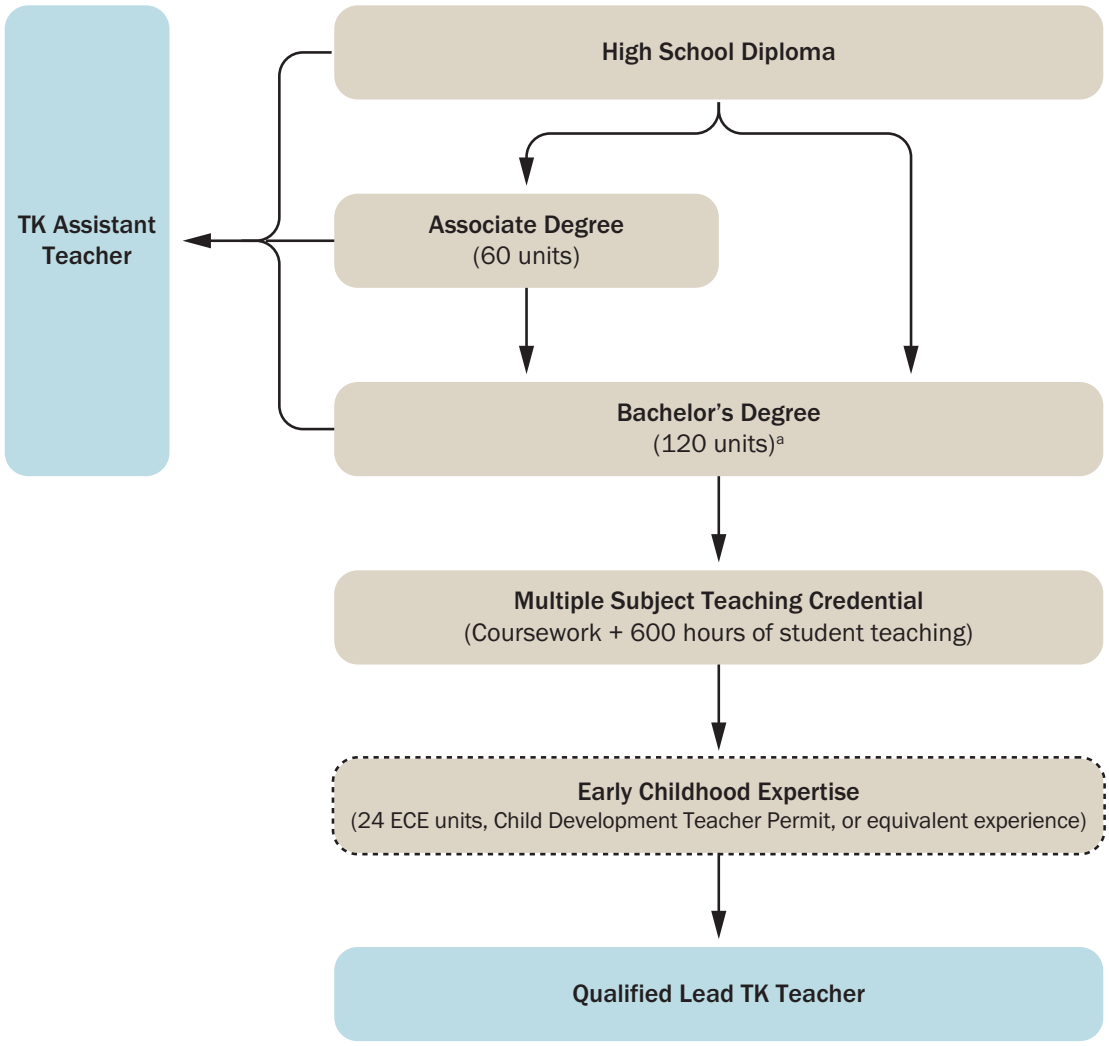
Finally, in an attempt to quantify how sensitive our TK teacher projections would be to adjustments in some of our assumptions, we use existing information on the share of children in TK–K combination classes, part-day sessions, current TK workforce, alternative classroom configurations, and attrition to calculate how each of them would influence the additional number of lead TK teachers. The comparisons with our baseline estimates are offered in Appendix C. We also note that changes to the data that we rely on for projections could influence our estimates as well. We will continue to monitor new data on TK implementation and adjust analyses accordingly.

Building a Qualified, Diverse TK Workforce

The teacher demand projections described above show that California has an urgent need for new lead and assistant TK teachers and that districts will need to fill positions quickly. To be successful, new teachers will need to have knowledge and expertise specific to teaching young children. A lead TK teacher must have a bachelor's degree, complete an accredited teacher credentialing program, and have early childhood knowledge or expertise. To work as an assistant TK teacher, an individual need only hold a high school degree and either pass an assessment demonstrating basic skills and pedagogical knowledge, complete 48 college units, or have an associate degree. (See Figure 5.) These requirements are quite different from the Child Development permits required for teaching in other early childhood programs, as described earlier.

In this section we describe potential supply pools that could feed this significant increase in teacher demand, including candidates currently in the workforce and new entrants. (See Table 4.) We discuss the additional requirements candidates would need to meet to be eligible to teach TK and how those requirements could be met. We start with candidates who can fill immediate lead TK teacher positions, including elementary school teachers, current early educators, and recent graduates of ECE bachelor's degree programs. We then move to candidates who are working toward their bachelor's degree. We also identify several potential pathways candidates might take into TK positions given the current TK requirement of a Multiple Subject credential plus early childhood expertise. We discuss how these pathways might be funded and address the importance of retention as a strategy to build a qualified, diverse workforce.

Figure 5
Steps Required to Teach in TK



a Units required to graduate may vary depending on institution and field of study. Up to 60 units earned from an associate degree may count toward the bachelor's degree requirements.

May already be fulfilled by teacher candidate. For example, a candidate may have completed 24 ECE units during their undergraduate studies.

Source: California Commission on Teacher Credentialing. (2022). *Transitional kindergarten*. https://www.ctc.ca.gov/credentials/assignment-resources/transitional-kindergarten (accessed 06/13/22).

Developing a New P–3 Credential for California

In June 2022, the California Commission on Teacher Credentialing (CTC) decided to move forward with the development of a revised ECE Specialist credential that allows the holder to teach preschool through grade 3. This credential is similar in structure to the Multiple Subject credential in that it requires coursework from an accredited teacher preparation program and 600 hours of clinical experience. However, it has an explicit focus on preparing teachers to work with children from preschool through grade 3. The credential additionally includes a unique set of teacher performance expectations, developed by the CTC and an expert working group, as well as its own set of program expectations. ECE Specialist credentialing coursework may be "stacked" on top of ECE coursework a candidate has already completed (such as coursework to earn a Child Development Teacher Permit). CTC anticipates that ECE Specialist credential programs will be able to be accredited by early 2023. These changes could improve the relevance of teacher preparation for TK teachers and may be more accessible to experienced early educators than the Multiple Subject credential.

Source: California Commission on Teacher Credentialing. (2022). *Information/action: Proposed authorization statement and credential requirements for the PK–3 Early Childhood Education Specialist credential*. https://www.ctc.ca.gov/docs/default-source/commission/agendas/2022-06/2022-06-3a.pdf?sfvrsn=a09f27b1_3

Table 4
Potential Pools of TK Teacher Candidates and Pathways to Meet TK Requirements

Potential Pools of Teachers	Additional Credential, Degree, or Coursework Needed to Teach TK	Potential Pathways
• Multiple Subject Teaching Credential holders • Out-of-state credential holders	• 24 units of ECE	• ECE cohort programs
• Early educators with a B.A. • Recent graduates of ECE-related B.A. programs • Classified staff with a B.A.	• Teaching credential	• Residency programs • Intern credential programs • Postbaccalaureate teacher credential programs
• Early educators without a B.A. • Recent graduates of ECE-related A.A. programs • Classified staff without a B.A.	• B.A. • Teaching credential	• Classified Staff Teacher Training Program • Apprenticeship • Cohort-based bachelor's degree programs • Integrated Teacher Education Programs
• Candidates without a B.A. or ECE experience	• B.A. • Teaching credential • 24 units of ECE	• Integrated Teacher Education Programs • Dual enrollment

Notes: Multiple Subject Teaching Credential holders and candidates enrolled in internship programs may serve as teacher of record while taking coursework. "Teaching credential" refers to any teaching credential that authorizes teaching in TK, including a Multiple Subject Teaching Credential; the proposed ECE Specialist credential; or, for special education, an Education Specialist credential.

Source: California Department of Education and California Commission on Teacher Credentialing. (2021). *Universal prekindergarten teacher pipeline resource compendium*. https://www.cde.ca.gov/ci/gs/p3/documents/upkteachercompendium.pdf; Californial Department of Education Commission on Teacher Credentialing. (2022). *Transitional kindergarten*. https://www.ctc.ca.gov/credentials/assignment-resources/transitional-kindergarten

Candidates With a Teaching Credential Who Lack ECE Experience

One group of teachers poised to teach TK is composed of teachers currently authorized to teach in elementary schools, including Multiple Subject credential holders in California and out-of-state credential holders. These teachers may teach TK, and the district may receive state funding for their classroom if they have an additional 24 units of ECE, a Child Development Teacher Permit, or equivalent experience by August 2023. Candidates who do not meet these requirements could take coursework to meet the TK teacher requirements while working.

Multiple Subject Teaching Credential holders

Little is known about the early childhood experience of current Multiple Subject credential holders in California. Presumably, many credentialed teachers would need to take 24 units of ECE coursework (the equivalent of eight 3-unit courses, or two full-time semesters) to be eligible to teach TK. Ideally, current elementary school teachers would be able to take this coursework while working. Moving current teachers from other grades into TK would address TK teacher demand but would not alleviate overall teacher shortages in elementary schools.

Out-of-state credential holders

Out-of-state credential holders make up a large portion of new entrants to the k–12 workforce in the state each year. In 2020–21, 1,180 out-of-state Multiple Subject credential holders entered the California workforce, making up 16% of new Multiple Subject credentialed teachers, a share that has been declining slowly over the past 6 years.[58] California might look to recruit out-of-state candidates with early childhood experience and facilitate their entry and credentialing.

Possible pathways to meet ECE requirements for TK

Local education agencies (LEAs) can help current Multiple Subject credentialed teachers who need 24 ECE units to meet TK requirements by organizing and funding cohorts of teachers to take ECE-focused coursework at partner institutions. TK coursework with a focus on classroom practice could be offered by community colleges, or universities could offer upper-division or graduate-level courses. Programs should consider including clinical supervision and coaching as a key expectation for some of these course units, given how important well-supervised clinical experience is for developing new practices and pedagogies. The courses could be intentionally designed to integrate into a flexible program of study that builds toward a master's degree in ECE for teachers who choose to pursue it. Courses could be offered at a centrally located school site or online and could be incorporated into in-service professional development. LEAs that do not have enough participants to compose a separate cohort could form a consortium with other LEAs, including county offices of education. Programs might build upon the models created for the California Transitional Kindergarten Stipend Program (2015–17), which provided TK and CSPP teachers with stipends for completing ECE coursework.[59]

Candidates With a Bachelor's Degree and Early Childhood Experience

Another key pool of candidates positioned to become TK teachers comprise those who have a bachelor's degree and early childhood experience and training but lack a teaching credential. These include current early educators who hold a Child Development Teacher Permit as well as recent

graduates of ECE bachelor's degree programs who have earned that permit. These educators could staff TK classrooms as the teacher of record on a provisional credential while working toward credential requirements. Educators with less experience, or those who want to take a more gradual path, could serve as assistant teachers while they work to meet TK teacher requirements.

Current early educators with a bachelor's degree

Early childhood educators currently working in preschool and child care who hold a bachelor's degree and a Child Development Teacher Permit are good candidates for facilitated paths into lead teacher positions in TK, since they have relevant knowledge and experience in working with young children and their families and already meet several requirements needed to earn a credential. Preschool teachers in California currently earn half the hourly wage of a TK or kindergarten teacher, on average, and are thus likely to be attracted by the professional wages and working conditions afforded by TK.[60]

According to a recent survey by the Center for the Study of Child Care Employment, about 41,000 (49%) of current center-based early educators have a bachelor's degree or higher, including 29,000 teachers who hold a Child Development permit at the teacher level or higher and nearly 24,000 whose bachelor's degree is in ECE or child development.[61] These educators are experienced in teaching young children and are more racially and ethnically diverse than the current TK–12 workforce. Sixty-six percent of center-based teachers in California identify as people of color, compared to 39% of TK–12 teachers. (See "Demographics of the ECE and TK–12 Workforce in California." California's TK–12 workforce is, however, more diverse than the teaching workforce in most other states.[62])

Some regions of California have a more ready supply of early educators with a bachelor's degree than others. In Los Angeles, for example, 54% of ECE teachers have a bachelor's degree, compared to 35% of ECE teachers in Northern California.[63] (See Figure 5.) This means it may be more challenging to draw TK teachers from this pool in northern and central parts of the state than in Southern California or the Bay Area.

Table 5
Percentage of Center-Based ECE Teaching Staff With a Bachelor's Degree, by Region

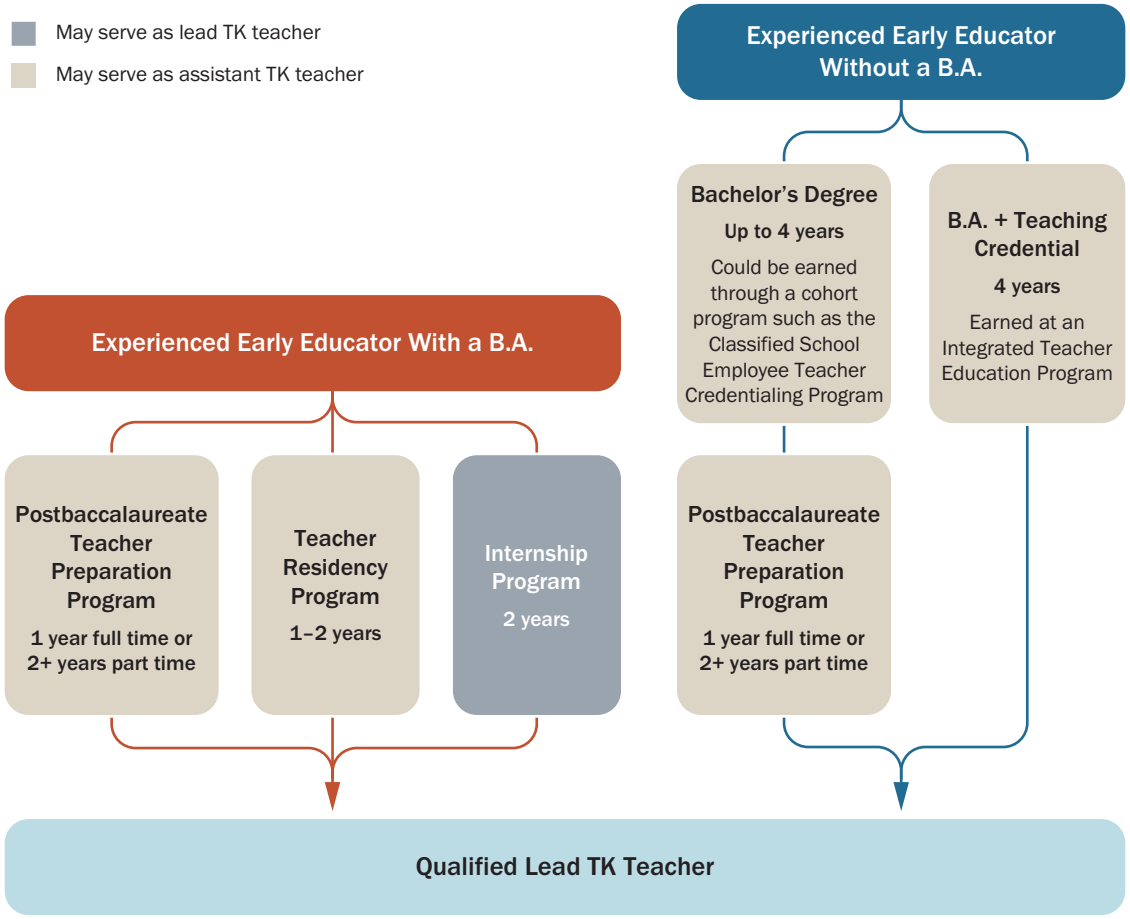
Northern	Bay Area	Central	Southern	LA	Statewide
35%	51%	41%	50%	54%	49%

Source: Personal email with Elena Montoya, Center for the Study of Child Care Employment (2021, October 27).

Highly trained and experienced early educators are good candidates for internship programs (a common credentialing pathway in k–12 in which a candidate works and is paid as the teacher of record while pursuing a credential), as well as for TK teacher residencies (a preparation model that allows candidates to participate in the classroom at least half-time under the supervision of a master teacher, possibly serving as an assistant TK teacher) and postbaccalaureate programs (typically full-time, full-year credentialing programs). (See Figure 6.)

As with current Multiple Subject credentialed teachers, moving current ECE teachers into TK positions will not reduce overall teacher shortages in the broader early childhood field—in fact, shifting preschool teachers into TK could exacerbate the already severe challenges faced by community- and home-based ECE programs in finding qualified staff, as will be discussed in the next section.[64] For this reason, policymakers might consider pairing TK workforce expansion efforts with investments in the rest of the ECE workforce, building on recent state investments such as efforts to reform child care and state preschool payment rates. It will be important to track these developments and the effect of TK on the early childhood workforce.

Figure 6
Pathways for Experienced Early Educators to Prepare to Teach TK



Source: California Commission on Teacher Credentialing. (2022). *Transitional kindergarten*. https://www.ctc.ca.gov/credentials/assignment-resources/transitional-kindergarten; California Commission on Teacher Credentialing. (2019). *2D: Information: Educator Preparation Committee: Update on the Integrated Undergraduate Teacher Preparation Program Grants*. https://www.ctc.ca.gov/docs/default-source/commission/agendas/2019-08/2019-08-2d.pdf?sfvrsn=8dc552b1_4

Graduates of ECE-related bachelor's degree programs

College graduates with ECE-related degrees, such as degrees in child development, are another potential source of new TK teachers. In 2019–20, institutions of higher education in California conferred nearly 5,000 bachelor's and master's degrees related to ECE and child development, a 5% increase compared to the previous year.[65] These graduates have knowledge relevant to teaching young learners, and some have teaching experience: About a third of programs required student teaching in 2015, and most required at least one practicum.[66] These experiences should be allowed to count toward either a Multiple Subject or ECE Specialist credential. Bachelor's degree holders in ECE- and child development–related fields are also good candidates for pathways such as teacher residencies and postbaccalaureate credentialing programs. Graduates who have student teaching experience might also be good candidates for internships.

Possible pathways to meet teaching credential requirements for TK

Residency programs

Teacher residencies are a high-quality preparation model that could allow candidates to serve in assistant TK teacher positions and be employed while working toward a credential.[67] Residency programs are open to individuals with a bachelor's degree and would be particularly well suited to those who hold a bachelor's degree in ECE, including candidates who do not have prior teaching experience. High-quality teacher residencies integrate credentialing coursework with a clinical placement, with residents working at least half-time in the classroom of an expert mentor teacher.

In 2021, California allocated $350 million in one-time funding for the California Teacher Residency Grant Program to expand teacher residency programs in shortage areas, including TK.[68] The program offers competitive grants of up to $25,000 per resident to launch or expand programs to LEAs, which must provide matching funds;[69] partner with an accredited teacher preparation program; and place residents alongside an experienced mentor teacher. The grant guidelines require that programs provide professional development and stipends or release time for mentor teachers and continued induction supports for residency graduates. Residency graduates commit to teaching in the sponsoring district for 4 years upon completion. In the first round of funding, released in February 2022, 18 programs received capacity-building grants to launch TK–K teacher residencies, out of a total of 39 new residency grants. A second round of funding for residency programs will open in August 2022.[70]

In addition to stipends offered through the state's residency grant program, there are several options that allow residents to get paid while participating in a residency program. For example, residents in TK classes could serve as paid assistant TK teachers to help districts meet new ratio requirements. Participants could also work part time in other roles, such as a paraprofessional, a substitute teacher, or expanded learning staff—a model used in Humboldt County's residency program.[71]

Intern credential programs

Intern credential programs may be an effective pathway for degree-holding ECE teachers who already have training and teaching experience. Districts may hire teachers on intern credentials when a fully credentialed teacher is not available. Intern credentials may be issued to teachers in training who have demonstrated basic skills and subject-matter competence but have not completed a teacher preparation program or met performance assessment requirements.[72] Candidates receive at least 120 hours of preservice preparation and then take coursework while teaching, typically earning their Multiple Subject Teaching Credential in 24 months.[73] Of the 7,800 Multiple Subject Teaching Credentials issued in 2019–20, about 21% (1,600) were completed through an internship pathway.[74]

A high-quality internship program provides candidates with mentorship as well as academic and financial support. The intern credential already requires support and supervision,[75] and it will be critical that supervisors or coaches have expertise in early learning and dual language development. New Jersey's Alternate Route, which was created as New Jersey expanded its credentialed preschool workforce in the early 2000s, could serve as a model. The Alternate Route required that LEAs provide experienced preschool teachers with substitute teachers when coursework was offered during the school day (some of which was provided on school campus), weekly district coaching from an early childhood specialist, and an end-of-year evaluation.[76]

Postbaccalaureate teacher credential programs

Candidates with a bachelor's degree may also participate in traditional credentialing programs. These may include full-time, full-year programs as well as credentialing programs offered over a longer time horizon with some online coursework that allows candidates to work while studying. Credential programs could be offered to cohorts of CSPP teachers on LEA campuses, for example. Teacher preparation programs may also acknowledge previous coursework or supervised teaching experience that candidates have already completed.

Candidates Without a Bachelor's Degree

There are candidates for TK teaching positions who do not yet have a bachelor's degree. These candidates are further away from earning their teaching credential but could be supported to work toward their degree and credential. Candidates in this category include current early educators and classified staff without a bachelor's degree and graduates of associate degree programs in ECE. These candidates could be employed as assistant TK teachers while working toward a credential.

Current early educators without a bachelor's degree

Of the 83,000 center-based educators in California's early learning workforce, about 26% have an associate degree and 25% have some college or less.[77] These educators hold valuable experience working with young children. They are thus good candidates for apprenticeship programs and degree pathway programs that lead efficiently to a bachelor's degree and, eventually, a teaching credential. (See Figure 6.) Early educators without a bachelor's degree could potentially be employed as assistant TK teachers while working toward their degree and credential or could take coursework and conduct clinical practice while continuing to work in ECE programs. Assistant teacher positions would be most attractive to this pool of candidates if they were full time and provided job responsibilities commensurate with the candidate's experience.

Current classified staff

Most elementary schools employ paraprofessionals, also known as teacher aides or instructional aides.[78] These individuals work under the supervision of a licensed teacher for various purposes; such as supporting special education programs. Paraprofessionals, as well as other classified staff and expanded learning staff,[79] are potential candidates to be assistant teachers in TK classrooms and may want to work toward earning their teaching credential.

Graduates of ECE-related associate degree programs

Another potential pool of TK teachers and assistant teachers consists of recent graduates of associate degree programs with a concentration in ECE or a related field, such as child development. In 2020–21, nearly 6,000 associate degrees in ECE were conferred in California.[80] More than half of new associate degrees in ECE were transfer degrees, meaning that graduates can enroll in the California State University system with junior standing, and they are thus halfway through the journey to a bachelor's degree.[81] These individuals have specialized knowledge in working with young children and are poised to assume assistant TK teacher positions as well as lead and assistant positions in CSPP. They are also candidates for pathways to a bachelor's degree and teaching credential.

Possible pathways to meet bachelor's degree requirements for TK

Classified School Employee Teacher Credentialing Program

Paraprofessionals can earn their bachelor's degree and teaching credential through the Classified School Employee Teacher Credentialing Program. In 2021, California allocated $125 million in one-time funding for the program to address teacher shortages, adding TK as a shortage area. This investment built upon the $45 million allocated in 2016 and 2017, which provided grants to LEAs to support up to 2,260 classified staff.[82] Each participant must hold at least an associate degree and may receive up to $24,000 to subsidize teacher training costs, such as tuition, fees, books, and examination costs, as well as academic guidance and individualized supports.[83] Demand for the program has historically been high. More than half of candidates in the program were candidates of color, making this program a promising strategy for diversifying the teacher workforce. Programs could specifically recruit educators working in TK as assistant teachers or CSPP teachers working on LEA campuses, many of whom are classified employees.

Apprenticeship

Early educator apprenticeship programs aim to increase the qualifications and wages of early educators through coursework paired with on-the-job training and support. Apprentices work alongside a skilled mentor—for example, working as an assistant teacher alongside a master teacher—and complete college courses to earn a degree and/or a Child Development permit. An example of an early childhood apprenticeship program in California is Early Care & Education Pathways to Success, which has programs in Alameda County and Southern California.[84] Apprenticeships are a promising model of preparation for candidates looking to earn their degree or obtain a Child Development permit to teach in early childhood programs.

Cohort-based bachelor's degree programs

Cohort-based bachelor's degree programs are programs offered to small groups of students who move through strategically chosen coursework, culminating in a degree.[85] Strong career advising is needed to ensure that students take only the coursework they need to graduate on time. In the EDvance program at San Francisco State, a lower-division pathway is designed to support aspiring educators during their first 2 years of college, with coursework that culminates in a Child Development Teacher Permit. EDvance's upper-division coursework is for early educators working at least part time, many of whom transfer from community colleges, allowing students with junior standing to earn a degree in 2 years. In both pathways, courses are cohort-based and strategically selected and scheduled to efficiently meet students' needs.[86]

Other Candidates

There are several other potential pools of candidates for TK positions that districts might tap into to fill assistant teacher positions and set them on the path to a teacher credential. These include recent high school graduates, parents of school-age children who are reentering the workforce, career changers, and more.

Possible pathways to meet bachelor's degree and teaching credential requirements for TK

Integrated Teacher Education Programs

One way to make a TK credential more accessible is by expanding options to get a bachelor's degree and teaching credential in 4 years. Currently, teacher preparation for grades TK–12 happens primarily at postbaccalaureate teacher preparation programs, after candidates have received their bachelor's degree. Building programs that offer a 4-year pathway to a Multiple Subject or ECE Specialist teaching credential could help to expand the teaching workforce, particularly programs that articulate with community colleges in a "2+2" model that combines 2 years of community college with 2 years in a 4-year college. A 2+2 model allows community college students to enter efficiently into a bachelor's degree program with junior standing.

The Integrated Teacher Education Program, created with a $10 million budget investment in 2016, provided 2-year competitive grants to institutions of higher education to develop new undergraduate teacher preparation programs so that candidates can earn their bachelor's degree and teaching credential in 4 years.[87] Priority was given to applicants who would partner with community colleges. Grants were awarded in late 2016 to 33 institutions of higher education—who partnered with 54 community colleges—to launch undergraduate teacher preparation programs in shortage areas (special education, math, science, and bilingual education). Programs began enrolling their first candidates in the 2018–19 school year, with 392 teacher candidates participating. The governor's 2022 proposed budget recommends an expansion of this program.[88] Extending the program with a focus on preparing credentialed early childhood teachers could leverage the capacity of current child development/ECE programs at 2- and 4-year colleges and connect them with teacher preparation programs that offer a credential.

Dual enrollment

Some high schools offer dual enrollment in ECE/child development courses at community colleges, which high school students can take for college credit. Dual enrollment is increasingly popular in California high schools: More than 18% of high school students who graduated in 2018–19 had enrolled in at least one community college class. Research shows that students earn an average of 7.6 college credits by the time they finish high school, equivalent to two and a half college courses, or more than half of a full-time college semester.[89] The governor's 2022 proposed budget includes expanded funding for dual enrollment as well as funding for college and career pathways, with a specific emphasis on pathways into early learning and education.[90] High school graduates who have dually enrolled in ECE coursework are good candidates for assistant TK teacher positions, possibly while working toward a college degree, and this strategy can help build a pipeline of future ECE teachers.

Funding Teacher Pathways Into TK

Several funding sources are available to help develop TK teacher pathways. (See Table 6.) Some funding goes directly to candidates themselves, including the Golden State Teacher Grant Program, a service scholarship of up to $20,000 for teacher candidates enrolling in a teacher preparation program who commit to work in a high-need school. Other funding sources go directly to LEAs (school districts and county offices). Two recently released grants are specific to developing the TK and CSPP workforce: the California Prekindergarten Planning and Implementation Grant ($200 million), a formula grant available to all LEAs; and the Early Educator Teacher Development Grant ($100 million), a competitive grant for LEAs. LEAs may use these grants for supporting teacher preparation through tuition and other financial assistance to candidates. Several other recent TK–12 workforce development grants may be used by LEAs to support the TK workforce, including the Educator Effectiveness Block Grant ($1.5 billion), the Teacher Residency Grant Program ($350 million), and the Classified School Employee Teacher Credentialing Program ($125 million). TK and ECE programs may also draw on state and federal workforce development grants for apprenticeship and dual enrollment, including California's Strong Workforce Program ($248 million ongoing) and the Career Technical Education Incentive Grant program ($300 million ongoing) for career technical education.[91] The governor's 2022 budget proposal would further expand funding for dual enrollment and career technical education, with a focus on access to child development and ECE courses.[92]

Table 6
Current Workforce Funding Available for the TK and CSPP Workforce

Funding Source	Funding Level	Description
Golden State Teacher Grant Program	$500M	Financial aid to students enrolled in a program leading to a preliminary teaching credential, as long as the student commits to working in a high-need school for 4 years. Grants may be up to $20,000 per candidate.
California Prekindergarten Planning and Implementation Grant	$200M	Categorical funds to LEAs and County Offices of Education (COEs) to be used for specified purposes, including workforce development for costs associated with CSPP, TK, or kindergarten, including partnerships with community preschool providers such as Head Start.
Early Educator Teacher Development Grant	$100M	Competitive funds for LEAs and COEs to increase the number of highly prepared teachers in CSPP and TK and provide professional development, including for teachers in kindergarten and community-based ECE programs.
Educator Effectiveness Block Grant	$1.5B	Categorical funding for LEAs for professional learning, for staff working with students in grades TK–12. Funds may be used for coaching, professional development, and other specified purposes.
Teacher Residency Grants	$350M	Competitive planning and implementation grants awarded to LEAs in partnership with institutions of higher education to address shortage areas, including TK. Grants may be up to $25,000 per teacher candidate.

Funding Source	Funding Level	Description
Classified School Employee Teacher Credentialing Program	$125M	Competitive funding for LEAs to recruit classified staff with at least an associate degree to help them complete their bachelor's degree or teaching credential and teach in high-need areas, including TK, with priority for applicants that recruit and support expanded learning and preschool staff. Grants may be up to $24,000 over 5 years per participant.
Strong Workforce Program	$248M annually	Funding for career technical education, including dual enrollment in high school and apprenticeship programs. Sixty percent of funding is allocated to community college districts, and 40% is determined by regional consortia of colleges.
Career Technical Education Incentive Grant	$300M annually	Competitive funding for LEAs to support career technical education to provide children in grades k–12 with the knowledge and skills to transition to employment and postsecondary education, including dual enrollment opportunities.

Sources: California Department of Education and California Commission on Teacher Credentialing. (2021). *Universal prekindergarten teacher pipeline resource compendium*. https://www.cde.ca.gov/ci/gs/p3/documents/upkteachercompendium.pdf; California Community Colleges. (2022). *Strong Workforce Program*. https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/Workforce-and-Economic-Development/Strong-Workforce-Program/; California Education Code § 53070 (2021).

Retaining Teachers in the Field

Retaining teachers in the workforce is as important as recruiting and preparing new teachers. About 8.5% of California's TK–12 teachers leave the profession each year; in general, two thirds of those who leave the profession leave for reasons other than retirement.[93] There is little data on turnover and attrition in ECE programs in California. However, recent evidence from other states suggests that turnover and attrition in ECE are often higher than in k–12, in part due to significantly lower compensation and less favorable working conditions, with rates varying by state and by program setting.[94] Not only does turnover contribute to shortages, but teacher turnover and attrition also create costs for the schools and programs they leave behind. For example, in an urban k–12 school district, it costs as much as $20,000 to replace each teacher due to recruiting and training expenses, and turnover hampers achievement for students whose classrooms or schools are affected.[95]

Furthermore, recent data suggest that teachers who are underprepared are significantly less likely to stay in the profession than teachers who complete a full preparation program. A 2021 report found high turnover among underprepared teachers in California, with 40% of new teachers hired on emergency-style permits or waivers leaving teaching altogether by the end of their third year—more than double the rate of teachers who had a preliminary credential (20%).[96] Elevated turnover was also found among those entering teaching as interns. It is possible that retention will be higher in emergency credentialing programs for experienced early educators, who are already committed to the profession and familiar with the demands of teaching. However, it will still be important to ensure that all preparation pathways are of high quality to avoid a revolving door of teachers in TK.

New Jersey's Investments in P–3 Credentialing: Preparing an ECE Workforce at Scale

New Jersey's experience expanding its preschool workforce offers many lessons for California. In the late 1990s, the New Jersey Supreme Court mandated that the state create a high-quality, universal preschool program for 3- and 4-year-olds in 31 of the state's poorest school districts, known as the Abbott districts. New Jersey's story is particularly compelling given that longitudinal studies of the state's preschool program have revealed significant long-term benefits for participating children, including lower rates of special education placement and improvements in math, literacy, and science scores that persisted at least through 5th grade. One of the requirements for preschool programs was that all preschool teachers—including educators in Head Start and community-based organizations receiving state funds—hold a bachelor's degree and a preschool to 3rd grade (P–3) credential. The state's policies fostered a significant and rapid shift in the supply of credentialed educators: While in 1999–2000 only 38% of preschool teachers in Abbott districts met credential requirements, by 2006 nearly all (97%) of the 2,900 teachers met this requirement. Many of these teachers came from the existing ECE workforce.

To meet the new mandate and to build a robust pipeline of future educators, New Jersey expanded its investments in higher education and ongoing professional learning. To begin, it created multiple pathways to a P–3 credential, including traditional 4-year bachelor's degree programs; postbaccalaureate programs; and the Alternate Route program, which allowed candidates with a bachelor's degree to earn the credential while working in state preschool programs. State-funded scholarships and stipends enabled many early educators to go back to school. Finally, pay parity with k–12 teachers—mandated by the court for all teachers with P–3 certification, including educators in Head Start and private preschool centers—was a critical incentive to attract and retain educators who otherwise might have left for better-paying k–12 positions.

New Jersey additionally expanded the size and capacity of higher education programs through two grant programs administered through the New Jersey Commission on Higher Education. The grants, totaling $13 million across preschool to grade 12 education programs, allowed institutions of higher education to develop their credentialing programs and hire more ECE faculty. The New Jersey Department of Education and institutions of higher education also made supports available to students already working in the field, such as providing academic tutoring and advising and holding courses at convenient locations and times. State support also enabled school districts to provide extensive professional development, overseen by an early childhood supervisor and master teachers, to in-service teachers after degree completion.

High expectations coupled with a significant increase in systemic financial support proved to be a successful combination for rapidly raising the qualifications of the ECE workforce, and the resulting preschool program was shown to have significant long-term benefits for children. New Jersey's preschool workforce reforms also generated lessons learned, such as the importance of developing pathways for educators without a bachelor's degree and for educators in rural areas. Another lesson learned is the importance of gathering data to understand the implications of reforms for the diversity of the educator workforce. New Jersey did not collect data on teachers' race and ethnicity, making unclear how many teachers of color in the preschool workforce were retained as new requirements were phased in.

Source: Gardner, M., Melnick, H., Meloy, B., & Barajas, J. (2019). *Promising models for preparing a diverse, high-quality early childhood workforce*. Learning Policy Institute. https://learningpolicyinstitute.org/product/preparing-diverse-high-quality-early-childhood-workforce-brief

Beyond TK: Supporting the Broader ECE Workforce

When the legislature and governor expanded TK, they expressed intent to continue support for CSPP, Head Start, and other early learning programs, such as by allowing TK-age children to maintain eligibility for these programs and giving CSPP contractors the option to provide before- and after-school care in coordination with TK.[97] Over the past few years, the administration and the legislature additionally began to increase child care and state preschool per-child funding levels and initiated a collective bargaining process with child care providers that will likely lead to higher compensation for many educators.

Still, lead TK teacher positions to date have offered much better compensation and working conditions than most other early childhood teaching positions, making it likely that many qualified ECE staff will shift into TK. Wages in 2019 in California for TK and kindergarten teachers were $41.86 an hour, compared to $16.83 for preschool teachers, $13.43 for child care workers, and $24.78 for center directors.[98] Furthermore, as credentialed teachers within the k–12 public school system, TK teachers have access to benefits such as health care and pensions, as well as working conditions that include paid planning time and summers off. Early educators frequently lack access to these benefits. If many early educators leave ECE programs to teach in TK, their departure may create significant staffing implications for the programs they leave.

Assistant TK positions, however, may be less likely to attract current early educators, given current paraprofessional salaries and working conditions. Assistant TK–12 teachers made an average salary of $37,260 in 2020, which is roughly on par with a preschool teacher's salary.[99] Additionally, many assistant TK teachers work part time and do not receive benefits.[100]

Because California collects so little data on the ECE workforce, the extent of teacher shortages, turnover, and attrition in California ECE programs is poorly understood. However, in states such as Louisiana, as many as one third of early educators leave each year.[101] The COVID-19 pandemic has greatly exacerbated these trends—the child care field had 11% fewer jobs in California in February 2022 than it did 2 years prior, mirroring national trends.[102] Programs that cannot find adequate staff will be forced to either take teachers who meet even lower qualifications or shut down.

Policymaking to expand the TK workforce should therefore consider solutions to support and expand the entire ECE workforce, including teachers of infants, toddlers, and 3-year-olds. Evidence suggests that increased pay for early educators can reduce turnover.[103] It is possible that by providing greater compensation and improved working conditions, policymakers could entice ECE teachers who have left the field to return. In the next section, we lay out our policy recommendations to support the ECE workforce broadly.

Recommendations

To ensure that California children reap enduring benefits from universal preschool, the state needs to take steps to produce a sufficient supply of qualified early educators in the short and long term. It is critical that new policies address the need for new TK teachers—given the speed and scale of TK expansion—but also the need to stabilize, support, and expand the broader early childhood workforce. New policies should prioritize pathways for racially, linguistically, and culturally diverse educators and recognize the assets of teachers already working in the ECE field. State policymakers can take the following six steps:

1. **Clearly map out and communicate career pathways into TK and other ECE programs.**

   There is an urgent need to clarify both what is required to teach in ECE programs, particularly TK, and how individuals at different stages of their careers or preparation can access scholarships and other financial supports. California's state agencies, including the California Department of Education (CDE) and California Commission on Teacher Credentialing (CTC), should make the pathways easy for all interest holders to understand and should provide customizable content to share locally. Louisiana's Department of Education, for example, developed a Pathways to Teaching website that helps candidates learn how to earn a P–3 credential and explore which institutions of higher education offer the coursework they need.[104] Each of California's counties will additionally need to coordinate and communicate its own workforce development pathways, since counties each have a unique set of supports for ECE educators to advance their careers. This process will require strong collaboration on a rapid time scale between LEAs, institutions of higher education, early childhood providers, unions, resource and referral agencies, and other community partners. County offices of education, which run Local Child Care and Developing Planning Councils in most counties, may be well situated to support this collaboration.[105] Santa Clara County, for example, has mapped out career pathways for its early educators at various stages of the Child Development permit matrix, with steps to a lead TK position.[106] County offices can also spearhead collaboration between LEAs and institutions of higher education; for example, by helping to field cohorts of teacher candidates across small or midsize LEAs with similar educational needs.

2. **Develop high-quality pathways into teaching TK that are tailored to the needs of experienced early educators.**

   California already has several pathways that teachers who hold a bachelor's degree can take to earn a credential, such as residency programs and internships. (See Figure 6.) However, requirements for these programs were developed primarily for candidates without prior teaching experience. Ideally, California will support pathways to a teaching credential for experienced early educators that give credit for their knowledge and expertise. Ensuring a straightforward pathway for early educators is a matter of practicality—to meet the urgent need for TK teachers—but also a matter of equity, given that the ECE workforce is composed primarily of women of color. State policymakers might therefore consider enabling and encouraging pathways that accept equivalencies for coursework that candidates have already completed and acknowledge clinical expertise for educators who can demonstrate teaching competence—for example, on a performance assessment. The CTC might provide guidance on what prior coursework and experience in ECE are equivalent to teacher preparation program requirements to expedite pathways for trained, experienced teachers.

3. **Provide grants to institutions of higher education to develop new credentialing programs for preschool to 3rd grade educators.**

   The CTC is poised to start accrediting ECE Specialist credential programs for preschool to 3rd grade (P–3) educators by 2023 (see "Developing a New P–3 Credential for California"), which will clarify the knowledge and expertise that these teachers need. To develop new credentialing programs specific to early childhood, institutions of higher education will need to make several up-front investments, including hiring new faculty, staff, and university supervisors; developing curriculum and articulating coursework across 2- and 4-year programs; and recruiting candidates. Higher education will also need to foster collaboration between teacher preparation programs and ECE-related degree programs, including at community colleges.

   The state could offer grants to institutions of higher education to do this work, as was done in New Jersey when it began its preschool expansion. (See "New Jersey's Investments in P–3 Credentialing: Preparing an ECE Workforce at Scale.") Grants should prioritize programs that make coursework accessible to candidates, such as by offering courses on nights and weekends and in community settings and by offering support such as tutoring and career advising. Grants might also prioritize programs in geographic areas of the state where relatively fewer early educators have a bachelor's degree, including Northern and Central California, which tend to be more rural. Sacramento State University, for example, offers online courses to cohorts of ECE educators in rural areas earning their bachelor's degree, with online coursework facilitated by a local instructor at child care or community college sites. Grants might also support the development of intern and residency programs that meet the unique needs of current early educators who have training and experience in preschool but not in k–3. University of La Verne in San Diego, for instance, has committed to working with cohorts of candidates in San Diego Unified School District to help them earn a teaching credential, with discounted tuition that is supplemented by Golden State Teacher Grants.

4. **Set appropriate requirements for assistant TK teachers to ensure these educators are prepared to support learning and development.**

   Assistant teachers play an important role in ECE classrooms, which are typically set up for individualized and small-group learning. California will need an estimated 16,000 to 19,700 assistant TK teachers to meet new child–adult ratio requirements by 2025–26, assuming that each classroom will be staffed by one lead and one assistant teacher. Concerningly, these assistant teachers are not required to have any early childhood knowledge or experience (just a high school degree), although national standards suggest assistant teachers should hold at least a Child Development Associate (CDA) credential.[107] Assistant teachers in TK classes might be held to the same education requirements as associate teachers in California State Preschool Program (CSPP) classes; that is, 12 units of ECE coursework or the equivalent. Given the implementation pressures LEAs are facing to staff classrooms, assistant teachers might be given several years to meet this requirement, with opportunities to take coursework while working.

5. **Make new investments in the broader early educator workforce, beyond TK.**

   As TK expands, child care and preschool programs will also need a growing supply of staff to run a high-quality program. To expand the workforce in the CSPP, Head Start, and other ECE programs, new investments will be needed to support candidates to earn a Child Development

permit or a bachelor's degree in ECE. Current workforce investments may be used for this purpose but are targeted to LEAs only. As a stopgap, the legislature could reinstate funding for the $195 million Early Educator Workforce Pathways Grant that was funded in the 2020 budget but later redirected to COVID-19 relief. The legislature might additionally fund expansion of dual enrollment of high school students in ECE coursework. New investments should be coupled with continued progress on reforming preschool and child care rates to ensure that programs have enough funding to offer teachers competitive wages and benefits.

6. Collect new data to monitor ECE workforce needs.

There are currently significant gaps in our knowledge about the ECE workforce, including TK. One problem is that there is no distinction between kindergarten and TK in the California Department of Education's staff files, meaning that we do not know how many teachers are currently teaching TK or what backgrounds they have. This could be addressed by adding new TK fields to the state's data system, including CALPADS. An even larger concern is that the state collects no workforce data on its other early childhood programs, including CSPP.[108] This makes it impossible to track staffing qualifications, demographics, and variation across regions, let alone measure existing shortages, turnover, and attrition of ECE educators. Because California does not collect these data, it must conduct paper audits to ensure that program staff meet Child Development permit requirements. The state should begin to collect workforce data from its state-subsidized programs, starting with CSPP, to ensure that policymakers understand ECE staffing needs and gaps across the state and can continuously monitor the need for new teachers. If ECE programs were to begin collecting and reporting unique identifiers for their staff, as is done in TK–12 with the California Statewide Identifier,[109] policymakers would be able to understand workforce shifts and more purposefully direct funding across California's ECE system.

As California builds pathways into teaching TK and preschool, it will be critical to additionally invest in in-service professional learning to support the knowledge and retention of new and current teachers. Districts particularly need guidance to support developmentally appropriate practices for young children, early childhood assessment, language development of dual language learners, and early identification and inclusion of children with disabilities. As part of these efforts, the state should pay particular attention to developing the ECE expertise of instructional leaders, who are responsible for placing, coaching, and evaluating teachers. For example, Fresno Unified School District created an Early Childhood Principal Institute when it began expanding TK.[110] California has begun to invest in school leadership for early learning through the 21st Century Leadership Academy, a statewide initiative to support professional development for school leaders, with a recent pilot focused on supporting leaders' knowledge of early childhood.[111] Continued investment in early learning leaders will be important for the success of universal preschool implementation.

Conclusion

California's investments in universal preschool are historic and present an opportunity to help children develop to their full potential. However, to ensure that TK lives up to its promise, classes will need to be staffed with well-qualified teachers. We estimate that by 2025–26, between 291,000 and 358,000 children will be enrolled in TK, requiring an estimated 16,000 to 19,700 lead teachers and a similar number of assistant teachers. Based on these projections, we estimate that California will need to hire an additional 11,900 to 15,600 lead teachers by 2025–26, above and beyond those already in the workforce. Such a rapid expansion of the early educator workforce comes with both risks and opportunities. Without sufficient attention, universal TK could result in ill-prepared teachers, high rates of teacher attrition, and lower-quality TK programs. With attention and support, however, California can develop strong preparation and pathways for TK and other early childhood teachers. As state and local administrators look to expand the workforce, they should consider the need for high-quality preparation pathways for the early childhood workforce across California's diverse early childhood system.

Appendix A: Methodology

Data

The analyses in this report rely on several data sources. To examine the projected demand for lead TK and assistant teachers by full implementation in 2025–26, as well as the variation by county, we used the following data:

- TK and K enrollment data, from the California Department of Education (CDE), 2015–16 to 2020–21[112]
- Population projections by age, average for 4- and 5-year-olds, from the California Department of Finance, 2015–16 to 2025–2026 (observed data from 2015 to 2020; projections start in 2021)[113]
- Expected TK rollout calendar and maximum number of children per adult that help determine the TK-eligible population (see Table 1)[114]

The first two data sources offer data by county. Analyses were conducted using county-level data. The totals for California were calculated as the sum of all the counties.

Methodology

We estimated the historical demand for TK teachers between 2015–16 and 2021–22 and the projected demand for TK teachers from 2022–23 through 2025–26 based on the following steps:

1. Estimate the number of students participating in TK each year through 2025–26:
    a. We calculated the number of students participating in TK on Census Day between 2015–16 and 2020–21.[115] Data on participation in TK between 2015–16 and 2020–21 was obtained from CDE TK enrollment data (pooled enrollment files for these years).
    b. We calculated the TK-eligible population. The TK-eligible population is based on the portion of age-eligible children in that year as a share of the observed or projected population.
    c. Using the data in a and b, we calculated TK uptake rates between 2015–16 and 2020–21 as the ratio between TK enrollment on Census Day and the TK-eligible population each year. We used the data from 2019–20 as the most recent reference because that is the last observation prior to the COVID-19 pandemic. In 2019–20, a fourth of 4-year-olds were eligible (i.e., those born in 3 months out of the 12 months, assuming the same number of children are born every month), and enrollment on Census Day was close to 89,000. For this year, the formula used is:

$$Uptake_{CA,\ 2019–20}\frac{TK\ Enrollment_{CA,\ 2019–20}}{TK\ Eligible\ population_{CA,\ 2019–20}} = \frac{88{,}883}{501{,}871 \times \frac{3}{12}} \cong 71\%$$

In California, on average and excluding the observation from 2020–21, this rate has been relatively stable between 2015–16 and 2019–20, ranging from 64% to 72% (peak observed in 2018–19). Enrollment in TK went from 88,883 in 2019–20 to 68,701 in 2020–21, for an uptake rate of 55.5%.

d. We estimated the number of students who enrolled in TK in 2021–22 (since data for this year are not yet available) and projected the number expected to enroll between 2022–23 and 2025–26. We applied three possible uptake rates to the TK-eligible population between 2021–22 and 2025–26 (See Table 3: TK Update Parameters Used in the Model):

   i. The observed 2019–20 county-level uptake applied to each county (i.e., actual TK enrollment in a county in 2019–20 as a share of the eligible population in the county)

   ii. A lower bound based on an increasing uptake over time, equal to 60% through 2024–25 and to 65% in 2025–26 applied statewide (slowly rebounding to pre-pandemic levels and based on recent state trends)

   iii. An upper bound based on an increasing uptake over time, equal to 75% through 2024–25 and to 80% in 2025–26 applied statewide (based on the evidence from other universal preschool programs and quickly rebounding and surpassing pre-pandemic uptake levels)

2. Estimate the number of lead TK teachers needed:

   a. To get an estimate of the number of lead TK teachers each year, we divided estimated TK enrollment by expected average class size, assuming that each class would be staffed by one lead teacher:

      i. We assumed that class size varies by year of implementation. Starting in 2022–23, child–adult ratios will be 12:1, effectively capping class size at 24 and requiring one lead teacher and one assistant teacher for every 24 students. Starting in 2023–24, the required child–teacher ratio will be 10:1. Assuming classes are staffed by one lead and one assistant teacher, this effectively caps class size at 20.

      ii. We assumed an initial average class size of 21.8, dropping to an average of 18.2 after 2023–24; 21.8 is the average class size observed by the American Institutes for Research in 2013–14 in its study of TK implementation,[116] and it is also the average TK–K class size in the most recent year for which data are available (2018–19).[117] If schools were aiming for a class size of 24, this would imply about a 91% enrollment efficiency rate. Applying the 91% efficiency rate to a class size of 20, we estimated an average of 18.2 students per class from 2023–24 onward.

      iii. We also modeled two other class-size scenarios, shown in Appendix C. The first additional scenario, with an initial class size of 24 and a class size of 20 after 2023–24, assumed that LEAs will place the maximum number of TK students in each classroom, on average. We believe this to be an unlikely scenario since it assumes 100% enrollment efficiency (i.e., that each class will be filled to full

capacity). We also modeled a class size of 24 through 2025–26, which could occur if all LEAs staff classes with one lead and two assistant teachers or if the legislature does not reduce ratios to 10:1.

b. We estimated the *additional* number of lead TK teachers needed by subtracting the estimated number of teachers in the workforce in 2019–20 from the projected total need each year through 2025–26. The number of teachers in the workforce in 2019–20 is proxied by the estimated demand in 2019–20 (i.e., by the number of children who enrolled in 2019–20 divided by an average class size of 21.8), which leads to an estimate of 4,100 teachers in 2019–20. We used this approach because the actual number of TK teachers employed is not available, since TK is not reported as a grade level in the state's data system. Because 2019–20 is the most recent administrative data pre-pandemic and we lack information on how the pandemic affected teacher supply at the TK level (via turnover or attrition), this year is considered the baseline to which we compared the number of additional teachers needed by full implementation. This reference may be subject to change when newer data for TK enrollment for 2021–22 become available. Likewise, we also may replace the baseline number of TK teachers with an estimate of TK teacher supply if data to produce this estimate become available.

3. Estimate the number of assistant TK teachers needed. We used the same methodology to estimate the number of assistant teachers needed, assuming each class will have one lead and one assistant teacher. We only calculated the total number of assistant teachers needed, rather than the additional number needed, because no data are available on the number of assistant teachers currently employed. As an alternative, we also calculated the number of lead and assistant teachers needed if each class were staffed by one lead and two assistant teachers, with a class size of 24; results are available upon request.

4. Disaggregate results by county:

   a. We next used the methods described above to estimate teacher demand at the county level. Since there is significant variation in TK uptake across counties, we calculated two additional uptake scenarios, with results available upon request:

      i. A lower bound of the observed 2019–20 county-level uptake minus 10 percentage points

      ii. An upper bound of the observed 2019–20 county-level uptake plus 15 percentage points

Appendix B: County-Level Projections

Table B1
Eligible TK Population by County, 2015–16 to 2025–26

County	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
California	127,100	127,200	125,700	125,700	125,500	123,700	121,500	196,700	265,900	337,400	447,700
Alameda	4,805	4,785	4,825	4,865	4,845	4,810	4,770	7,610	10,190	13,045	17,275
Alpine	<5	<5	<5	<5	<5	<5	<5	<5	<5	6	9
Amador	70	70	65	65	70	75	75	125	185	245	330
Butte	620	615	600	610	595	565	615	1,025	1,440	1,840	2,450
Calaveras	85	85	85	85	85	90	95	165	230	290	390
Colusa	80	80	80	80	75	75	80	130	165	215	290
Contra Costa	3,255	3,195	3,165	3,195	3,215	3,245	3,195	5,200	7,235	9,295	12,295
Del Norte	85	85	80	80	75	75	70	110	160	205	275
El Dorado	395	400	385	395	410	400	395	680	990	1,285	1,710
Fresno	4,010	4,075	4,045	4,065	4,065	3,975	3,810	6,215	8,630	11,140	15,105
Glenn	105	100	95	95	100	95	95	155	215	285	380
Humboldt	385	380	380	375	365	370	370	585	810	1,030	1,345
Imperial	750	785	765	785	820	810	780	1,245	1,665	2,110	2,870
Inyo	50	55	55	55	50	45	45	75	100	125	175
Kern	3,610	3,565	3,575	3,580	3,555	3,510	3,465	5,670	7,840	10,110	13,615
Kings	660	640	625	615	605	590	575	985	1,395	1,810	2,410
Lake	185	185	185	195	190	180	190	325	440	545	740
Lassen	80	75	70	70	70	70	75	125	180	230	305

County	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
California	127,100	127,200	125,700	125,700	125,500	123,700	121,500	196,700	265,900	337,400	447,700
Los Angeles	32,175	32,195	31,825	31,715	31,335	30,345	29,485	47,170	62,450	78,120	102,965
Madera	590	595	570	560	555	550	540	885	1,240	1,570	2,085
Marin	630	610	595	610	600	575	565	880	1,055	1,220	1,695
Mariposa	40	35	35	35	35	35	35	60	90	120	165
Mendocino	260	270	275	265	260	250	255	415	545	690	925
Merced	1,070	1,075	1,070	1,060	1,055	1,035	1,055	1,735	2,375	3,090	4,155
Modoc	25	20	20	20	20	25	20	35	55	80	100
Mono	35	35	35	35	35	35	35	55	75	95	120
Monterey	1,650	1,705	1,660	1,605	1,590	1,560	1,505	2,405	3,340	4,285	5,640
Napa	385	380	370	360	365	355	335	520	715	915	1,205
Nevada	195	190	195	205	205	200	195	325	450	580	795
Orange	9,705	9,745	9,645	9,610	9,660	9,525	9,525	15,750	21,310	27,005	35,390
Placer	965	950	935	940	930	925	930	1,555	2,150	2,795	3,825
Plumas	40	40	35	35	35	40	45	70	95	125	170
Riverside	7,980	7,985	7,865	7,925	8,010	8,030	8,055	13,260	18,065	23,055	30,740
Sacramento	4,990	5,000	4,900	4,925	4,980	4,970	4,840	8,020	11,405	14,670	19,415
San Benito	185	185	180	180	180	185	185	300	400	515	700
San Bernardino	7,720	7,660	7,540	7,595	7,680	7,640	7,535	12,315	16,900	21,680	28,760
San Diego	11,380	11,555	11,385	11,470	11,580	11,435	11,095	17,825	23,725	29,725	39,265
San Francisco	2,025	2,125	2,140	2,150	2,130	2,130	2,085	3,375	4,505	5,730	7,650
San Joaquin	2,740	2,715	2,645	2,635	2,645	2,670	2,655	4,350	5,915	7,575	10,170
San Luis Obispo	650	655	650	645	635	635	625	1,005	1,380	1,750	2,305

County	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
California	127,100	127,200	125,700	125,700	125,500	123,700	121,500	196,700	265,900	337,400	447,700
San Mateo	2,340	2,320	2,310	2,285	2,280	2,270	2,200	3,480	4,535	5,680	7,525
Santa Barbara	1,430	1,440	1,435	1,450	1,455	1,425	1,380	2,260	3,140	4,080	5,420
Santa Clara	6,250	6,170	6,135	6,105	6,030	5,985	5,835	9,225	12,165	15,130	19,965
Santa Cruz	855	870	820	785	790	805	785	1,235	1,640	2,085	2,765
Shasta	515	515	520	530	525	510	500	840	1,185	1,520	2,035
Sierra	7	5	5	5	5	6	7	10	15	20	25
Siskiyou	110	120	120	115	110	110	110	180	255	340	460
Solano	1,310	1,315	1,310	1,330	1,340	1,325	1,325	2,175	2,955	3,725	5,015
Sonoma	1,335	1,285	1,260	1,235	1,215	1,215	1,195	1,805	2,315	3,000	4,035
Stanislaus	1,950	1,965	1,940	1,915	1,925	1,950	1,975	3,215	4,370	5,615	7,540
Sutter	335	330	320	320	335	340	325	530	750	955	1,300
Tehama	205	190	190	200	215	215	200	315	455	605	810
Trinity	30	30	30	30	30	30	30	55	80	100	135
Tulare	2,040	2,045	2,000	1,945	1,910	1,885	1,830	2,975	4,155	5,385	7,220
Tuolumne	110	110	110	110	110	110	110	190	270	350	465
Ventura	2,710	2,675	2,600	2,570	2,530	2,485	2,400	3,890	5,395	6,940	9,240
Yolo	645	645	665	680	660	650	655	1,065	1,435	1,810	2,445
Yuba	300	300	300	295	295	290	290	490	660	835	1,110

Notes: Results are historical from 2015–16 to 2020–21 and projected from 2021–22 to 2025–26. Results are based on population data estimates and rollout schedule through full implementation. Numbers for California are rounded to the closest hundred. Numbers for counties are rounded to the closest five. Numbers for California may differ from those in the main text due to rounding.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Table B2
Estimated Total Number of Lead TK Teachers in 2019–20 and Projected Number of Lead TK Teachers if County-Level Uptake Remains Constant, 2022–23 to 2025–26, by County

County	Observed Uptake Rate in 2019–20	Estimated Number of Lead TK Teachers Needed in 2019–20	Projected Number of Lead TK Teachers Needed if 2019–20 Uptake Rate Remains Constant				Projected Number of Lead TK Teachers Needed if Uptake Hits 80% in 2025–26
			2022–23	2023–24	2024–25	2025–26	
California	70.8%	4,100	6,300	10,300	13,000	17,300	19,700
Alameda	63.2%	140	220	355	455	600	760
Alpine	0.0%	<5	<5	<5	<5	<5	<5
Amador	93.5%	<5	5	10	15	15	15
Butte	51.2%	15	25	40	50	70	110
Calaveras	79.4%	<5	6	10	15	15	15
Colusa	99.2%	<5	6	9	10	15	15
Contra Costa	75.1%	110	180	300	385	510	540
Del Norte	48.5%	<5	<5	<5	5	7	10
El Dorado	100.0%	25	30	55	70	95	75
Fresno	72.7%	135	205	345	445	605	665
Glenn	50.7%	<5	<5	6	8	10	15
Humboldt	83.6%	15	20	35	50	60	60
Imperial	43.3%	15	25	40	50	70	125
Inyo	70.8%	<5	<5	<5	5	7	8
Kern	100.0%	170	260	430	555	750	600
Kings	67.4%	20	30	50	65	90	105

County	Observed Uptake Rate in 2019–20	Estimated Number of Lead TK Teachers Needed in 2019–20	Projected Number of Lead TK Teachers Needed if 2019–20 Uptake Rate Remains Constant				Projected Number of Lead TK Teachers Needed if Uptake Hits 80% in 2025–26
			2022–23	2023–24	2024–25	2025–26	
California	70.8%	4,100	6,300	10,300	13,000	17,300	19,700
Lake	49.0%	<5	7	10	15	20	35
Lassen	62.3%	<5	<5	6	8	10	15
Los Angeles	84.3%	1,210	1,825	2,900	3,630	4,780	4,535
Madera	69.5%	20	30	45	60	80	90
Marin	42.7%	10	15	25	30	40	75
Mariposa	77.2%	<5	<5	<5	5	7	7
Mendocino	49.3%	6	9	15	20	25	40
Merced	86.6%	40	70	115	150	200	185
Modoc	19.4%	<5	<5	<5	<5	<5	<5
Mono	89.8%	<5	<5	<5	5	6	5
Monterey	72.5%	55	80	135	170	225	250
Napa	57.5%	10	15	25	30	40	55
Nevada	76.2%	7	10	20	25	35	35
Orange	74.9%	330	540	880	1,115	1,460	1,560
Placer	100.0%	65	70	120	155	210	170
Plumas	100.0%	<5	<5	5	7	9	7
Riverside	72.4%	265	440	720	920	1,225	1,355
Sacramento	46.2%	105	170	290	375	495	855
San Benito	100.0%	10	15	20	30	40	30

County	Observed Uptake Rate in 2019–20	Estimated Number of Lead TK Teachers Needed in 2019–20	Projected Number of Lead TK Teachers Needed if 2019–20 Uptake Rate Remains Constant				Projected Number of Lead TK Teachers Needed if Uptake Hits 80% in 2025–26
			2022–23	2023–24	2024–25	2025–26	
California	70.8%	4,100	6,300	10,300	13,000	17,300	19,700
San Bernardino	62.6%	220	355	585	745	990	1,265
San Diego	62.4%	330	510	815	1,020	1,350	1,730
San Francisco [a]	2.5%	<5	<5	6	8	10	335
San Joaquin	63.8%	80	125	210	265	360	450
San Luis Obispo	75.8%	20	35	60	75	95	100
San Mateo	41.1%	45	65	105	130	170	330
Santa Barbara	61.9%	40	65	105	140	185	240
Santa Clara	43.1%	120	180	290	360	475	880
Santa Cruz	58.5%	20	35	55	65	90	120
Shasta	76.2%	20	30	50	65	85	90
Sierra	0.0%	<5	<5	<5	<5	<5	<5
Siskiyou	75.9%	<5	6	10	15	20	20
Solano	74.5%	45	75	120	155	205	220
Sonoma	89.6%	50	75	115	150	200	180
Stanislaus	76.0%	65	110	185	235	315	330
Sutter	89.8%	15	20	35	45	65	55
Tehama	50.6%	5	7	15	15	25	35
Trinity	81.1%	<5	<5	<5	5	6	6
Tulare	84.0%	75	115	190	250	335	320

County	Observed Uptake Rate in 2019–20	Estimated Number of Lead TK Teachers Needed in 2019–20	Projected Number of Lead TK Teachers Needed if 2019–20 Uptake Rate Remains Constant				Projected Number of Lead TK Teachers Needed if Uptake Hits 80% in 2025–26
			2022–23	2023–24	2024–25	2025–26	
California	70.8%	4,100	6,300	10,300	13,000	17,300	19,700
Tuolumne	65.3%	<5	6	10	15	15	20
Ventura	65.0%	75	115	195	250	330	405
Yolo	64.5%	20	30	50	65	85	110
Yuba	83.2%	10	20	30	40	50	50

[a] San Francisco's low uptake rate is a reporting error, but the corrected value was not available at the time of writing.

Notes: Numbers for California are rounded to the closest hundred. Numbers for counties are rounded to the closest five. Numbers for California may differ from those in the main text due to rounding. Class size is equal to 21.8 in the baseline year until 2022–23 and 18.2 in 2023–24 until 2025–26. Uptake for California is based on total enrollment divided by the eligible population in the state. Total for California equals the sum of the counties.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. County population projections (2010–2060): *P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Appendix C: Sensitivity Analyses

The TK workforce projections provided in this report rely upon a simple set of assumptions and parameters. In the table below, we offer additional estimates to illustrate how sensitive our projections are to adjustments to some of our assumptions. Specifically, we used existing information on the share of students in TK–K combination classes and part-day sessions, the size of the current TK workforce, alternative classroom configurations, and teacher attrition to calculate how these factors would influence the additional number of lead TK teachers demanded with respect to our baseline estimates. We used what we consider to be conservative estimates, and thus, the percentage change from baseline should be interpreted as the maximum extent to which our projections are likely to be adjusted. We will continue to monitor new data on TK implementation and adjust future analyses accordingly.

Table C1
Variation in Additional Lead TK Teachers in 2025–26 Relative to Baseline Estimates Under Alternative Assumptions

	Uptake 65%		Uptake Equal to 2019–20 (71% Statewide)		Uptake 80%	
Assumption Modeled	Additional Lead TK Teachers	Variation Relative to Baseline (%)	Additional Lead TK Teachers	Variation Relative to Baseline (%)	Additional Lead TK Teachers	Variation Relative to Baseline (%)
Estimates Using Baseline Assumptions	11,900	–	13,200	–	15,600	–
Varying Assumptions About Part-Day and Combination Classes						
13% students served in TK–K combination classes	9,800	-17.6%	10,900	-17.4%	13,100	-16.0%
33% of students taught by teachers teaching two part-day classes	9,200	-22.7%	10,300	-22.0%	12,300	-21.2%
Varying Assumptions About Current Workforce Size and Attrition						
Current TK workforce 30% larger than estimated	10,700	-10.1%	12,000	-9.1%	14,400	-7.7%
Current TK workforce 30% smaller than estimated	13,100	10.1%	14,400	9.1%	16,800	7.7%
Annual attrition of 8.5%	12,300	3.4%	13,600	3.0%	16,000	2.6%
Varying Class-Size Assumption in 2025–26						
Class size of 24 in 2019–20 and 20 in 2025–26	10,900	-8.4%	12,000	-9.1%	14,200	-9.0%
Class size of 21.8 in 2025–26	9,200	-22.7%	10,300	-22.0%	12,300	-21.2%

Note: Numbers rounded to the nearest hundred.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. County population projections (2010–2060): *P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/

Combination classes: This scenario assumed that 13% of enrollment in 2025–26 will be taught by existing kindergarten teachers in TK–K combination classes. (Our baseline assumption did not account for TK–K combination classes.) We believe that 13% of children in TK–K combination classes is a high estimate since that was the proportion of children enrolled in combination classes in 2014–15, an early year of TK implementation;[118] more recent data are not available. This scenario further assumed that kindergarten classes have the capacity to absorb these new TK students without adding new staff. Enrolling children in combination classes would decrease the number of lead teachers needed. However, it would likely increase the need for assistant TK–K teachers, assuming that the child–adult ratios required for TK are observed in combination classes and that most kindergarten classes do not already have an aide.

Part-day classes: This scenario assumed that 33% of enrollment in 2025–26 would represent children participating in part-day sessions, with each part-day teacher teaching two part-day sessions. (Our baseline projections assumed that each TK teacher teaches only one class, whether or not it is part-day.) A study showed that in 2016–17, 33% of TK classes were part-day;[119] more recent data are not available. We believe it is a conservative estimate to assume that every teacher teaches two part-day sessions.

Size of the current TK workforce: These scenarios assumed that our baseline estimate of the number of lead TK teachers currently in the workforce (4,100) was over- or underestimated by 30%, for a total workforce size of 2,900 to 5,300. The Center for the Study of Child Care Employment, for example, estimated that there are currently 5,300 teachers in the TK workforce, using 2018–19 TK enrollment as a baseline and dividing by a class size of 17.[120] By contrast, the workforce could be much smaller than we estimated due to higher-than-average attrition as a result of the COVID-19 pandemic. Data based on the count of actual teachers in TK are not available.

Attrition: This scenario assumed that 8.5% of TK–12 lead teachers would leave the workforce each year through 2025–26. (Our baseline projections did not account for attrition.) We assumed that additional hires would be needed to fill vacancies due to attrition, including attrition from our baseline estimate of 4,100 teachers in the workforce in 2019–20. If we assume attrition every year is solved through additional hires, then we could assume the baseline estimate is recovered every year with replacements, and thus we applied the attrition rate just once when calculating total teacher demand in 2025–26.[121] An attrition rate of 8.5% was observed in TK–12 in California in 2015–16;[122] more recent data and data specific to TK are not available.

Class size: We projected the number of lead teachers needed using two additional class sizes at full implementation in 2025–26. (Our baseline assumption was that average class size was 21.8 in 2019–20 and would be 18.2 in 2025–26). The first alternative scenario we projected is for a class size of 24 in 2019–20 and for 20 in 2025–26, which assumed that all classes would be filled perfectly efficiently, a scenario we believe is, on average, unlikely. The second alternative scenario we projected is an average class size of 21.8. The latter might be likely if LEAs aim for a class size of 24—i.e., either if the legislature does not reduce ratios from 12:1 to 10:1 as planned or if LEAs choose to staff classes of 24 with one lead and two assistant teachers—and have 90% enrollment efficiency. In 2018–19, 21.8 was the average TK–K class size.[123]

Appendix D: Total Lead TK Teacher Demand

Table D1 shows total lead TK teacher demand from 2019–20 to 2025–26. These estimates were obtained following the same methodology and assumptions discussed in Appendix A. These data underlie the workforce demand projections for additional lead TK teachers needed, cumulative and by year, as shown in Figure 2 on page 11. We included total lead TK teacher demand estimates for school years 2020–21 and 2021–22 that are not shown in some of the earlier graphs. We excluded these two school years from the main report because they are characterized by a series of circumstances that made them atypical and because we do not have enough data to model them differently from how we modeled the remaining years.

One data challenge is that TK enrollment is not known for school year 2021–22. TK enrollment declined significantly across all California counties during the first year of the pandemic, 2020–21, when most schools were operating remotely. Enrollment in TK went from 88,883 in 2019–20 to 68,701 in 2020–21, a 23% decrease. Just over 55% of the eligible population enrolled in 2020–21 statewide.[124] TK enrollment data for 2021–22 have been collected but were not publicly available at the time of writing.[125]

We also lacked data to assess how responsive teacher supply was to enrollment variations in these years in terms of hirings, layoffs, and attrition. Our workforce estimates for all the periods were exclusively based on projected enrollment (which depends on projected population), representing the number of teachers demanded to serve that enrollment. For years 2019–2020 through 2021–22, the estimates do not represent the actual teachers in the workforce. Between 2019–20 and 2021–22, the eligible population was estimated to decrease by about 1% to 2% depending on the year, leading to a decline in projected TK enrollment in two of our three uptake scenarios. (See Table D1.)

The 2019–20 baseline estimates that we used to compute the number of additional teachers that would be needed in 2022–23 are higher than the number of teachers that we estimated were needed in 2021–22. We determined that we would use the 2019–20 estimates for two reasons: (1) it is unclear if the predicted enrollment decline in 2021–22 would actually result in a reduction of the TK workforce, and 2) it is possible that even if these teachers were not assigned to TK classrooms, they may still be teaching as part of the k–12 workforce and could be recaptured as TK teachers in 2022–23.

Table D1
Estimated Total Number of Lead TK Teachers Needed in California

	Baseline Year	COVID-19 Pandemic Years (Unclear How Supply Was Affected Due to Lack of Data)		Projections Based on TK Rollout Schedule			
	2019–20	2020–21[a]	2021–22[a]	2022–23	2023–24	2024–25	2025–26
Lower Bound	4,100	3,400	3,300	5,400	8,800	11,100	16,000
Uptake Rate Observed in 2019–20	4,100	4,000	3,900	6,300	10,300	13,000	17,300
Upper Bound	4,100	4,300	4,200	6,800	11,000	13,900	19,700

[a] Estimates for 2020–21 and 2021–22 reflect the total number of teachers needed those years based on projected enrollment and the standard parameters for classroom staffing and class size. They do not represent actual teachers in the workforce those years, as teacher supply may not have been responsive to enrollment shifts those years. "Lower Bound" assumes uptake will be equal to 60% through 2024–25 and 65% in 2025–26; "Uptake Observed in 2019–20" assumes county-level uptake rates will be equal to county-level uptake rates in 2019–20 for all years through 2025–26 (71% statewide); and "Upper Bound" assumes uptake will be equal to 75% through 2024–25 and 80% in 2025–26. Class size is equal to 21.8 in the baseline year until 2022–23 and 18.2 in 2023–24 until 2025–26. Total for California equals the sum of the counties.

Note: Numbers rounded to the closest hundred.

Sources: California Department of Education. Transitional kindergarten data from 2015–16 to 2019–20. https://www.cde.ca.gov/ds/ad/fstkdata.asp; California Department of Finance. *County population projections (2010–2060): P-2B county population by age*. https://dof.ca.gov/Forecasting/Demographics/projections/; California Education Code § 48000 (2021).

Endnotes

1. Meloy, B., Gardner, M., & Darling-Hammond, L. (2019). *Untangling the evidence on preschool effectiveness: Insights for policymakers*. Learning Policy Institute. https://learningpolicyinstitute.org/product/untangling-evidence-preschool-effectiveness-report

2. The study looked at the impact of TK with participants in the 2013–14 and 2014–15 school years. Manship, K., Holod, A., Quick, H., Ogut, B., Brodziak de los Reyes, I., Anthony, J., Jacobson Chernoff, J., Hauser, A., Martin, A., Keuter, S., Vontsolos, E., Rein, E., & Anderson E. (2017). *The impact of transitional kindergarten on California students: Final report from the study of California's Transitional Kindergarten Program*. American Institutes for Research. https://www.air.org/resource/impact-transitional-kindergarten-california-students

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5. Williams, A., Montoya, E., Kim, Y., & Austin, L. J. E. (2021). *New data shows early educators equipped to teach TK*. Center for the Study of Child Care Employment, University of California, Berkeley. https://cscce.berkeley.edu/early-educators-equipped-to-teach-tk/

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9. Prior to 2010, children who turned 5 by December 1 had been eligible for kindergarten. California Education Code § 48000 (2021).

10. Enrollment data are for Census Day. Enrollment in TK was 68,701 in 2020–21, the first year of the pandemic, when many classes were virtual; data are not yet publicly available for 2021–22. Some districts allow younger 4-year-olds to enroll in what they call early or expanded transitional kindergarten (ETK), using local funds to cover the cost of the program until a child's fifth birthday. LPI analysis of the transitional kindergarten data from 2019–20 and 2020–21 from the California Department of Education. https://www.cde.ca.gov/ds/ad/fstkdata.asp

11. In 2013–14, the average TK class had a class size of 21.8 and a child–adult ratio of 17:1. The National Association for the Education of Young Children recommends a ratio of 10:1 or better. Manship, K., Holod, A., Quick, H., Ogut, B., Brodziak de los Reyes, I., Anthony, J., Jacobson Chernoff, J., Hauser, A., Martin, A., Keuter, S., Vontsolos, E., Rein, E., & Anderson E. (2017.) *The impact of transitional kindergarten on California students: Final report from the study of California's Transitional Kindergarten Program*. American Institutes for Research. https://www.air.org/resource/impact-transitional-kindergarten-california-students; National Association for the Education of Young Children. (2018). *Staff to child ratio and class size*. https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/accreditation/early-learning/staff_child_ratio_0.pdf

12. California Commission on Teacher Credentialing. (2022). *Multiple Subject Teaching Credential (CL-561C)*. https://www.ctc.ca.gov/credentials/leaflets/multiple-subject-teaching-credential-(cl-561c)#:~:text=The%20Multiple%20Subject%20Teaching%20Credential,classes%20organized%20primarily%20for%20adults; *Guidance on clinical practice and supervision of preliminary multiple and single subject teaching candidates.* (2020). https://www.ctc.ca.gov/docs/default-source/educator-prep/pdf/clinical-practice-guidance.pdf?sfvrsn=9cf257b1_10

13. California Education Code § 48000(g) (2021).

14. Paraprofessionals in Title I schools may also have 48 units of college or an associate degree in lieu of a local assessment. California Department of Education. (2020). Paraprofessional requirements. https://www.cde.ca.gov/nclb/sr/tq/paraprofessionals.asp

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16. Manship, K., Holod, A., Quick, H., Ogut, B., Brodziak de los Reyes, I., Anthony, J., Jacobson Chernoff, J., Hauser, A., Martin, A., Keuter, S., Vontsolos, E., Rein, E., & Anderson E. (2017.) *The impact of transitional kindergarten on California students: Final report from the study of California's Transitional Kindergarten Program*. American Institutes for Research. https://www.air.org/resource/impact-transitional-kindergarten-california-students

17. California Education Code §48000(i) (2021).

18. Enrollment declined to 58,000 in October 2020, the first year of the pandemic when many CSPP classes were operating remotely. Of the 4-year-olds enrolled in 2019–20, 24,000 children were in full-day, full-year programs, while 58,000 were in part-day, school-year programs. California Department of Education. (2022). *Two-month average data reports: Average number and percent of children by contract type and age group, October 2019/April 2020*. https://www.cde.ca.gov/sp/cd/re/ccannualreports.asp

19. California Department of Education. (2021.) CSPP staffing qualifications. https://www.cde.ca.gov/sp/cd/ci/csppstaffqual.asp (accessed 02/25/22).

20. Data are for lead teachers in Title 5 programs. Forty-nine percent of all center-based teachers hold a bachelor's degree. Personal email with the Center for the Study of Child Care Employment (2022, January 26).

21. Four-year-olds make up over one third of all California Head Start enrollment birth to age 5. Some of these children attended blended Head Start–CSPP classes. Office of Head Start. (2022). *Program information report (PIR) enrollment statistics report: 2019--State Level: CA*. https://eclkc.ohs.acf.hhs.gov/data-ongoing-monitoring/article/program-information-report-pir

22. Head Start Performance Standards, §1302.91. https://eclkc.ohs.acf.hhs.gov/policy/45-cfr-chap-xiii/1302-91-staff-qualifications-competency-requirements

23. Personal email with the Center for the Study of Child Care Employment (2022, January 26).

24. California Department of Education. (2022). *Two-month average data reports: Average number and percent of children by contract type and age group, October 2019/April 2020*. https://www.cde.ca.gov/sp/cd/re/ccannualreports.asp

25. Personal email with the Center for the Study of Child Care Employment (2022, January 26).

26. Data from the National Center for Education Statistics show that, nationally, 20.9% of the teacher workforce in elementary and secondary public schools are teachers of color, or non-white teachers. See National Center for Education Statistics (n.d.). *National Teacher and Principal Survey. Percentage distribution of teachers, by school type, race/ethnicity and selected main teaching assignment: 2017–18*. https://nces.ed.gov/surveys/ntps/tables/ntps1718_21022407_t12n.asp

27. Child Development Training Consortium. (n.d.). Curriculum Alignment Project. https://www.childdevelopment.org/higher-ed-faculty/curriculum-alignment-project

28. Degree majors include child development and early childhood education. Degree types include Associate in Science for Transfer (2,487), Associate in Arts for Transfer (1,102), Associate of Science (1,225), and Associate of Arts (1,002). California Community Colleges Chancellor's Office. (n.d.) Management Information Systems Data Mart. https://datamart.cccco.edu/Outcomes/Program_Awards.aspx (accessed 01/13/22).

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31. California Commission on Teacher Credentialing. (2021). *Approved institutions and programs*. https://www.ctc.ca.gov/commission/reports/data/approved-institutions-and-programs (accessed 10/06/21).

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33. California Commission on Teacher Credentialing. (2019). *Education Specialist Instruction Credential (CL-808C)*. https://www.ctc.ca.gov/credentials/leaflets/Education-Specialist-Credential-(CL-808C); California Commission on Teacher Credentialing. (2021). *Approved institutions and programs*. https://www.ctc.ca.gov/commission/reports/data/approved-institutions-and-programs (accessed 02/25/22).

34. We used projections released on May 3, 2021. Our estimates will be subject to change if the California Department of Finance releases updated projections for the populations of interest in this study: 4- and 5-year-old children, by county. The prior public data release was available on January 10, 2020 (baseline 2019). See more information at https://dof.ca.gov/Forecasting/Demographics/Projections/.

35. Research on the factors that determine families' preferences across ECE programs is limited, given that most families have limited options from which to choose. However, the literature suggests that families' main concerns in the decision to enroll their children in preschool are affordability and perceived quality. Other considerations include hours of care and geographic proximity, especially for working families. Ehrlich, S. B., Allensworth, E. M., & Tansey, J. (2021). *Meeting families' needs: Attendance rates in full-day vs. half-day pre-k*. University of Chicago Consortium on School Research; Forry, N., Tout, K., Rothenberg, L., Sandstrom, H., & Vesely, C. (2013). *Child care decision-making literature review* [Issue Brief OPRE 2013-45]. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. https://www.acf.hhs.gov/sites/default/files/opre/child_care_decision_making_literature_review_pdf_version_v2.pdf

36. Two enrollment series are available for TK participants: enrollment on Census Day and cumulative enrollment. We based our analyses on enrollment on Census Day. Uptake may be slightly overestimated because the 2019–20 enrollment likely includes some children who turned 5 after the December 1 eligibility cutoff, as some districts have already expanded TK eligibility beyond what is funded by the state. As a point of comparison, approximately 86.5% of 5-year-olds in California enrolled in kindergarten in 2019–20. California Department of Education. (2022). *Transitional kindergarten (TK) program participation by ethnicity*. https://data1.cde.ca.gov/dataquest/tkreports/TkReport.aspx?cdscode=00000000000000&year=2019-20; California Department of Finance. County population projections (2010–2060): P-2B county population by age. https://dof.ca.gov/Forecasting/Demographics/projections/ (for average 5 year old population in 2019 and 2020).

37. Several other organizations have projected the enrollment for TK by 2025–26. The California Department of Education projects enrollment using regression and computational models, with some of the computational parameters including factors 0.7 and 0.85 for uptake. The Legislative Analyst Office projects uptake equal to 2019–20 by full implementation in 2025–26, with rates slightly lower in initial years of implementation. The Department of Finance projects about 70% uptake initially, moving toward 80% from 2021–22 to 2030–31. The Center for the Study of Child Care Employment assumes the equivalent of a 71.5% uptake at full implementation. California Department of Education. (2022). *Universal preschool planning and implementation guidance, Volume 1*; Personal email with Edgar Cabral, Legislative Analyst's Office (2022, January 22); Personal email with Alex Alvarado, Department of Finance (2022, January 21); Personal email with Elena Montoya, Center for the Study of Child Care Employment, University of California, Berkeley (2021, September 3).

38. Data on TK enrollment in the first year into the COVID-19 pandemic show a marked decline in uptake across all California counties. Enrollment in TK went from 88,883 in 2019–20 to 68,701 in 2020–21 (LPI analysis of https://www.cde.ca.gov/ds/ad/filestkdata.asp), for a 23% decrease in California and for an uptake rate of 55.5%. We focus on the pre-pandemic uptake rates, as they may be more representative (eventually) of a context in which enrollment expansion is not influenced by an external disruption like the recent pandemic. We predict that enrollment increased in 2021–22 with the return to in-person learning.

39. Uptake rates went up from 40% in Washington, DC, when universal preschool began in 2008–09; from 56% in Oklahoma in 2002 (the first year for which data are available after the program started in 1998); from 57% in Vermont when universal began in 2014); and from 35% in West Virginia in 2005. See Friedman-Krauss, A. H., Barnett, W. S., Garver, K. A., Hodges, K. S., Weisenfeld, G. G., & Gardiner, B. A. (2021). *The state of preschool 2020: State preschool yearbook*. National Institute for Early Education Research; Chaudry, A., Morrissey, T., Weiland, C., & Yoshikawa, H. (2017). *Cradle to Kindergarten: A New Plan to Combat Inequality*. Russell Sage Foundation.

40. In 2019, 16 counties in California had an uptake of greater than 80%; 24 counties had an uptake of more than 75%; and 30 counties had an uptake of greater than 71%.

41. To accommodate ratios, the options that minimize the number of adults per classroom are 24 students for one lead teacher and one assistant teacher (ratio 12:1) and 20 students for one lead teacher and one assistant teacher (ratio 10:1). Starting in 2022–23, TK classes may not exceed 24 students. An average of 24 students per class is also the maximum allowed for LEAs to receive k–3 class-size reduction funding. Our assumption of a class size of 20 is not meant to imply that legislation will mandate changes to cap class size at 20 in the near future. California Education Code § 48000. (2021).

42. 2017–18 is the last year for which we had class size at the time of writing. Data are for TK and kindergarten, combined. TK-specific class-size data from Manship, K., Holod, A., Quick, H., Ogut, B., Brodziak de los Reyes, I., Anthony, J., Jacobson Chernoff, J., Hauser, A., Martin, A., Keuter, S., Vontsolos, E., Rein, E., & Anderson E. (2017.) *The impact of transitional kindergarten on California students: Final report from the study of California's Transitional Kindergarten Program*. American Institutes for Research. https://www.air.org/resource/impact-transitional-kindergarten-california-students; Average TK–K class-size data from California Department of Education. (2022). *Class listing: Average class size report (2017–18)*. https://dq.cde.ca.gov/dataquest/CourseReports/ClassResults.aspx?Filter=A&TheYear=2018-19&cTopic=Course&cChoice=CrseAvg&cLevel=State&cdscode=00000000000000&Subject=Y&AP=Y&IB=Y&CTE=Y&lNotAll=False (accessed 04/01/22).

43. In other words, we assume that teachers will not teach two part-day sessions. In 2017–18, the most recent year for which data are available, 33% of TK classes were part-day. Lee, J., & Fuller, B. (2019). *Facilities options—how to advance early education?* University of California, Berkeley. https://gse.berkeley.edu/sites/default/files/equalizing_childrens_access_to_early_education.pdf

44. Since there is no distinction between kindergarten and TK in the California Department of Education's staff files, TK teachers are difficult to identify separately from K teachers. It is technically feasible to distinguish between TK and K teachers, but these data are not publicly available.

45. In California, roughly 8.5% of teachers leave the profession or state each year, and another 8% leave their current schools to move to another. In recent years, teacher attrition has accounted for about 88% of demand in California. Darling-Hammond, L., Sutcher, L., & Carver-Thomas, D. (2018). *Teacher shortages in California: Status, sources, and potential solutions*. *Getting Down to Facts II* [Technical report]. Stanford University and Policy Analysis for California Education. https://gettingdowntofacts.com/sites/default/files/2018-09/GDTFII_Report_Darling-Hammond.pdf

46. Alpine and Sierra had fewer than 10 eligible TK students. The available data for San Francisco show TK enrollment of 54 students on Census Day in 2019–20, for an uptake rate of 2.5%. San Francisco Unified School District reports that these enrollment data are not accurate, but corrected TK enrollment was not available at the time of writing. Personal email with Meeno Yashar, Chief of Early Education, San Francisco Unified School District (2022, April 18). San Francisco's uptake rates varied significantly in the years for which data were available. To test the sensitivity of our overall analysis to San Francisco's enrollment, we have used the average uptake between 2015–16 and 2020–21 in San Francisco instead of the uptake of 2019–20 to calculate lead TK teacher demand in the county. Estimated demand for TK teachers in 2019–20 would be 13.6 (instead of 2) and in 2025–26 would be 58.4 (instead of 11). Increased demand would be 44.8 (instead of 9). This would only have a minor impact on total additional demand for teachers in California between 2019–20 and 2025–26. Our total lead TK teacher demand results are thus not sensitive to this adjustment. Results are available upon request.

47. Slovick, A., Bryant, C., Huang, C., & Fuller, B. (2022). *Transitional kindergarten in California: Early growth and uneven district capacity*. University of California, Berkeley and Center for District Innovation and Leadership in Early Education. https://gse.berkeley.edu/sites/default/files/berkeley-transitional-kindergarten-report-2022.pdf

48. Total TK enrollment in Los Angeles Unified School District was 15,437 in 2019–20, equivalent to 36.4% of the district's kindergarten enrollment (net of TK enrollment). Given that only one quarter of 4-year-olds are age-eligible for state-funded TK, we expect that any enrollment over 25% of kindergarten enrollment is attributable to ETK. California Department of Education. (2022). *Transitional kindergarten program participation by ethnicity*. https://dq.cde.ca.gov/dataquest/tkreports/TkReport.aspx?cdscode=19647330000000&year=2019–20

49. CSPP enrollment was from October 2020, by county, and includes enrollment in LEAs, centers, and licensed family child care homes. Data for CSPP were shared via personal correspondence with CDE (November 2021). Data for child care enrollment are obtained from California Department of Education. (n.d.) *Number of children served by county of service provider, SFY 2019–20*. https://www.cde.ca.gov/sp/cd/re/ccannualreports.asp#avgsettype

50. The authors arrived at this finding by disaggregating median TK enrollments as a percentage of kindergarten enrollments and dividing districts into quartiles by overall enrollment size. Slovick, A., Bryant, C., Huang, C., & Fuller, B. (2022). *Transitional kindergarten in California: Early growth and uneven district capacity*. University of California, Berkeley and Center for District Innovation and Leadership in Early Education. https://gse.berkeley.edu/sites/default/files/berkeley-transitional-kindergarten-report-2022.pdf

51. The Expanded Learning Opportunities Program (ELO-P) provides funding for after-school and summer school enrichment programs for transitional kindergarten through 6th grade. California Department of Education. (2022). Expanded Learning Opportunities Program. https://www.cde.ca.gov/ls/ex/elopinfo.asp

52. Darling-Hammond, L., Sutcher, L., & Carver-Thomas, D. (2018). *Teacher shortages in California: Status, sources, and potential solutions*. *Getting Down to Facts II* [Technical report]. Stanford University and Policy Analysis for California Education. https://gettingdowntofacts.com/sites/default/files/2018-09/GDTFII_Report_Darling-Hammond.pdf

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56. Hill, L., & Prunty, E. (2022). *Setting the stage for universal preschool: Is transitional kindergarten serving students equitably?* Public Policy Institute of California. https://www.ppic.org/publication/setting-the-stage-for-universal-preschool/

57. Williams, A., Montoya, E., Kim, Y., & Austin, L. J. E. (2021). *New data shows early educators equipped to teach TK*. Center for the Study of Child Care Employment, University of California, Berkeley. https://cscce.berkeley.edu/early-educators-equipped-to-teach-tk/. The Center for the Study of Child Care Employment (CSCCE) at the University of California, Berkeley estimates that the state will need up to 26,000 assistant teachers (whereas we project the need for up to 19,700). CSCCE assumes that there are currently 5,300 TK teachers in the workforce, which it obtained by dividing the number of students enrolled in 2018–19 by 17, the average student–teacher ratio in 2013–14. By comparison, we divided the number of students enrolled in 2019–20 by the average TK class size in 2013–14. Details about CSCCE's methodology from personal email with Elena Montoya, CSCCE (2021, September 3).

58. The number of Multiple Subject Teaching Credentials issued to individuals prepared out of state increased from 2010–11 (1,220) to 2016–17 (1,755) and has been declining since then. California Commission on Teacher Credentialing. (2021). *Teacher supply in California, 2020–21*. https://www.ctc.ca.gov/docs/default-source/commission/reports/ts-2020-2021-annualrpt.pdf?sfvrsn=ee227b1_6 (accessed 04/26/22).

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60. Powell, A., Montoya, E., Austin, L. J. E., & Kim, Y. (2022). *Double or nothing? Potential TK wages for California's early educators*. Center for the Study of Child Care Employment, University of California, Berkeley. https://cscce.berkeley.edu/publications/data-snapshot/double-or-nothing-potential-tk-wages-for-californias-early-educators/

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64. Gedye, G. (2021, October 29.) Child care in California hasn't rebounded—why many workers aren't coming back. *CalMatters*. https://calmatters.org/economy/2021/10/california-child-care-worker-shortage/

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66. Austin, L. J. E., Whitebook, M., Kipnis, F., Sakai, L., Abbasi, F., & Amanta, F. (2015). *Teaching the teachers of our youngest children: The state of early childhood higher education in California, 2015*. Center for the Study of Child Care Employment, University of California, Berkeley.

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70. California Commission on Teacher Credentialing. (2022). 2021 Teacher Residency Capacity Grants Round 1 Funding, February 2022. https://www.ctc.ca.gov/docs/default-source/educator-prep/grants/funding_announcement_round1_-2021_teacher_residency_capacity_grants.pdf?sfvrsn=213224b1_3

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76. Gardner, M., Melnick, H., Meloy, B., & Barajas, J. (2019). *Promising models for preparing a diverse, high-quality early childhood workforce in California*. Learning Policy Institute.

77. Personal email with the Center for the Study of Child Care Employment (October 27, 2021). Among lead center-based teachers, 25% have an associate degree and 20% have some or no college. Kim, Y., Austin, L. J. E., Montoya, E., & Powell, A. (2022). *Education and experience of the California ECE workforce*. Center for the Study of Child Care Employment, University of California, Berkeley. https://cscce.berkeley.edu/education-and-experience-of-the-california-ece-workforce/

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79. Findings from the 2012 Afterschool Workforce Survey show there are over 30,000 expanded learning staff members employed in public programs, with 22% holding a B.A. and 19% an A.A. Seventy percent are people of color, and 90% are bilingual. California School-Age Consortium. (n.d.). *Afterschool Workforce Survey findings*. https://www.calsac.org/calsac-blogging/2018/2/8/afterschool-workforce-survey-findings (accessed 02/25/22).

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92. California Department of Finance. (2022). 2022–23 Governor's Proposed Budget: Budget Summary. https://www.ebudget.ca.gov/

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94. Nearly half of child care teachers in Louisiana left their jobs from one year to the next in 2017–18 and 2018–19. In Nebraska, average annual teacher turnover was 26% in child care, 15% in pre-k, and 16% in k–3. Bassok, D., Markowitz, A., Bellows, L., & Sadowski, K. (2021). New evidence on teacher turnover in early childhood. *Educational Evaluation and Policy Analysis*, *43*(1), 172–180. https://doi.org/10.3102/0162373720985340; Schlieber, M., Whitebook, M., Austin, L. J. E., Hankey, A., & Duke, M. (2019). *Teacher's voices: Work environment conditions that impact teacher practice and program quality—Marin County*. Center for the Study of Child Care Employment, University of California, Berkeley; Roberts, A. M., Gallagher, K. C., Sarver, S. L., & Daro, A. M. (2018). *Early childhood teacher turnover in Nebraska* [Research brief]. Buffet Early Childhood Institute at University of Nebraska; Caven, M., Khanani, N., Zhang, X., & Parker, C. E. (2021). *Center- and program-level factors associated with turnover in the early childhood education workforce* [REL 2021–069]. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands.

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104. California has a similar website operated by the California Department of Education's Department of Special Education that could be adapted to add new information for TK teachers; however, it is unclear to what extent this website is utilized. See Teach California: https://www.teachcalifornia.org/.

105. Local planning councils are charged with conducting child care needs assessments, identifying funding priorities, and fostering regional collaboration, among other things. California Department of Education. (2021). Local child care and development planning councils. https://www.cde.ca.gov/sp/cd/re/lpc.asp

106. California Department of Education. (2022, February 17). *Building a robust, diverse, and well-supported workforce* [Webinar].

107. Paraprofessionals in California must have at least a high school degree and pass a local assessment of knowledge and skill in assisting in instruction. Paraprofessionals in Title I schools may also have 48 units of college or an associate degree in lieu of a local assessment. California Department of Education. (2020). Paraprofessional requirements. https://www.cde.ca.gov/nclb/sr/tq/paraprofessionals.asp. National standards described in Friedman-Krauss, A. H., Barnett, W. S., Garver, K. A., Hodges, K. S., Weisenfeld, G. G., & Gardiner, B. A. (2021). *The state of preschool 2020: State preschool yearbook*. National Institute for Early Education Research. https://nieer.org/wp-content/uploads/2021/08/YB2020_Full_Report_080521.pdf#page=32

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113. California Department of Finance. County population projections (2010–2060): P-2B county population by age. https://dof.ca.gov/Forecasting/Demographics/projections/

114. California Education Code § 48000. (2021).

115. Two enrollment series are available for TK participants: enrollment on Census Day and cumulative enrollment.

116. This study found that the average class size was 21.8 for the first cohort and 22.6 for the second cohort. Manship, K., Holod, A., Quick, H., Ogut, B., Brodziak de los Reyes, I., Anthony, J., Jacobson Chernoff, J., Hauser, A., Martin, A., Keuter, S., Vontsolos, E., Rein, E., & Anderson E. (2017.) *The impact of transitional kindergarten on California students: Final report from the study of California's Transitional Kindergarten Program*. American Institutes for Research. https://www.air.org/sites/default/files/2021-07/Transitional-Kindergarten-Final-Report-June-2017-rev.pdf

117. Average TK–K class-size data from California Department of Education. (2022). *Class listing: Average class size report (2018–19)*. https://dq.cde.ca.gov/dataquest/CourseReports/ClassResults.aspx?Filter=A&TheYear=2018-19&cTopic=Course&cChoice=CrseAvg&cLevel=State&cdscode=00000000000000&Subject=Y&AP=Y&IB=Y&CTE=Y&lNotAll=False

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121. In a scenario with attrition but no replacement, accumulated attrition would reduce the baseline workforce estimate by 8.5% every year, or by 41% over the 6 years between 2019-20 and 2025-26.

122. Darling-Hammond, L., Sutcher, L., & Carver-Thomas, D. (2018). *Teacher shortages in California: Status, sources, and potential solutions*. *Getting Down to Facts II* [Technical report]. Stanford University and Policy Analysis for California Education. https://gettingdowntofacts.com/sites/default/files/2018-09/GDTFII_Report_Darling-Hammond.pdf

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124. LPI analysis of California Department of Education transitional kindergarten data from 2020–21. https://www.cde.ca.gov/ds/ad/fstkdata.asp

125. Combined data for K and TK show a small increase in the number of students enrolled, from 462,172 in 2020–21 to 469,928 in 2021–22, a 1.7% increase. The state lost about 110,000 students overall in the same period, for a decrease of 1.8% with respect to 2020–21. https://www.cde.ca.gov/nr/ne/yr22/yr22rel20.asp

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